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Accessible Residential Communities: Issues and Solutions

Research Report

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ACCESSIBLE RESIDENTIAL COMMUNITIES

ISSUES AND SOLUTIONS

Prepared for

Policy Evaluation Division

Canada Mortgage and Housing Corporation

by

Associated Planning Consultants Inc.

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Pamela J. Cluff
Project Director

STATEMENT OF WORK

In drawing up the contract for this study, Canada Mortgage and Housing Corporation stated that: "The purpose of this project is to take the initiative in identifying the elements that are supportive of accessible housing and to identify the means of assuring that these will become a reality."

As well as fulfilling this requirement, this research report:

identifies and details the problems and issues that arise in trying to achieve communities in which disabled persons can live independently and manage by themselves to the best of their ability;

documents the problematic features and successful strategies of existing legislation, support programs, financing mechnisms and administrative practices that affect the livability of housing units for disabled persons;

identifies the lines of responsibility in dealing with these issues to aid in the provision of accessible (barrier-free) community environments, supportive of housing for disabled persons as well as all other groups.

Although written specifically for the disabled consumer, this document is also intended to be a valuable resource to municipal planners, local administrators, architects and designers.

The report is the final product of the project on accessible residential communities for the disabled commissioned by Canada Mortgage and Housing Corporation. After defining, for the purposes of this study, the terms "community" and "disability", the document is divided into five sections, dealing with:

- the external physical environment
- public transportation systems
- private transportation and parking facilities
- public buildings and facilities
- service delivery.

Following a statement of the main issue of each of these topics, the barriers faced by the disabled are listed under the headings:

- physical barriers
- administrative and legislative barriers
- service barriers.

Recommended solutions, samples of applied solutions in Canada, and comments follow. The last section, "Summary of Principles," gives a general overview of the recommendations made in the document.

A separate monograph providing a more detailed and somewhat more philosophical discussion of the issues of accessibility was presented to CMHC in the form of a Study Report (December 1982).* The Study Report includes an extensive bibliography, a list of contacts and acknowledgments.

It is important to note that the framework of the research as detailed by CMHC was to include all components of community once disabled persons were outside the door of their dwelling units. The critical issue of housing is not, therefore, within the statement of work for this particular study. Some aspects of housing were, however, discussed in the Study Report.

Methodology

The researchers undertook to seek information from both primary and secondary sources to obtain a comprehensive view of the issues and solutions of accessible residential communities.

Information was gathered from the available literature, a knowledgeable resource group, a cross-Canada trip to visit a variety of consumers and providers in five major regions, and the response to the broad distribution of a discussion paper.

Work started in the summer of 1981 and a first report was submitted to CMHC in December of that year. The information contained in that first report was summarized, refined and edited at the request of CMHC; the revised report was submitted in May 1982. The Study Report, together with this final research document, represents the entire results of the research undertaken.

The study team and resource group were made up of persons with specialized knowledge and skills in the areas of research, legislation, design, planning and care delivery.

*Revised Study Report submitted May 1982. Available on loan from the Canada Housing Information Centre, CMHC, Montreal Road, Ottawa, Canada K1A 0P7 (613-748-2365).

INTRODUCTION

Regardless of the rapid social changes in other sectors of society, and the growing expectations of successive generations, physically disabled persons are still constrained by traditional attitudes, especially the belief that they must be "cared for" by society. This outlook has resulted in institutionalization for many and a lack of enabling legislation and services that would have encouraged and supported the physically disabled as part of the mainstream of society.

Some community based housing for the disabled is now being provided, but without appropriate community and personal support services for the disabled, independent living will remain a dream for many of them. In this study, the entire community is examined to see how supportive it is of the disabled's needs.

What the disabled need most from the communities in which they live is accessibility. Housing for disabled people cannot be successful unless it is located in physically accessible environments that provide ready access to shops, recreation, transportation, work and education opportunities, and essential community services and resources. Widespread accessibility will require the cooperation of urban planners, commercial developers, public facility owners, recreation and education authorities and others.

Beyond the physical environment, other less tangible barriers exist. Lack of education and employment opportunities, and lack of income reduce the individual's ability to pursue those options in society that most of us take for granted. Furthermore, disabled people have special needs--personal and health care services, for example, to ensure their ability to survive in the community.

The philosophical objective underlying service delivery to the disabled is provision of a network of community support services, available to all who require them. Examples of the services required and the nature of the organizational framework within which they will exist are provided within this study as an aid to others seeking to create a totally accessible community.

The constraints of zoning bylaws, use and occupancy codes, and other regulations, coupled with the larger constraints of financing, exacerbate the difficulty of finding appropriate solutions.

No simple or single structure exists whereby provincial or municipal housing authorities can coordinate the work of urban planners, social planners and providers of direct human services. Projects that have succeeded have generally been the result of non-profit groups and enlightened municipal housing and social service bodies working together.

No mandatory legislation for accessible housing and communities exists. And, because there are no obvious financial benefits, the private sector claims no responsibility for the provision of accessible communities.

The public sector, both municipal and provincial, represents an alternative to the private non-profit provider. The public sector is in a position to recognize the need for a full spectrum of shelter and community alternatives to satisfy the needs of a wide range of disabled tenants and home owners.

Little research is available on the community context in which disabled persons live. Solutions for disabled persons have generally not been sought in the larger community context, rather they have dealt with individuals. While many handicapped persons require significant support services in order to live independently, there is a need for a range of options to serve a diversity of disabilities, income levels, and family groupings. Solutions are therefore required which satisfy the full range of needs.

Access to community support services must be considered in the broadest terms, and include physical accessibility, eligibility, usability, appropriateness and cost. The bridges between such services must include information, communication, transportation and education. These bridges are an integral part of the community context, although, as an area of support for the disabled, they have been largely ignored.

The research undertaken for this study indicates that many attempts have been made to seek solutions to the problem of accessibility for the disabled. Many have not proven satisfactory, either financially or socially.

Solutions must satisfy social expectations, financial limitations, an appropriate time framework, the legislative context and user appropriateness. This document attempts to indicate appropriate solutions.

As well as discussing the constraints facing the provision of an accessible community for the disabled, this document discusses the facilitating mechanisms that are already in place and being successfully used; problems are also identified.

It is hoped that this research study, together with the work of other studies being undertaken by Canada Mortgage and Housing Corporation in response to initiatives undertaken in the International Year of Disabled Persons, will assist not only in the provision of accessible housing, but in the provision of totally accessible, usable and supportive communities for physically disabled persons.

2. COMMUNITY AND DISABILITY - DEFINITIONS

Community

For the purpose of this document, an interpretation of community was required that would clearly identify those elements in a community that support accessibility for disabled persons.

The term "community" has been variously used to describe a person's immediate environment and the larger context. In recent years, however, the term has been commonly applied to an individual's subjective analysis of his or her own environment, interests and fellowships.

It has been argued, with justification, that disabled persons perceive their community in a way different from non-disabled persons housed in the same location. Physical or mental disability, compounded by economic constraints and architectural and systems barriers, determines the usability of a neighbourhood. The boundaries of a disabled person's community are, therefore, established by the barriers that limit them rather than geography itself.

Since individual coping mechanisms vary considerably, and are to some extent dependent upon the type of disability, the age and the life experience of each individual, a finite delineation of "community," as perceived by disabled persons in general, is difficult to achieve. Suffice it to say that the portrayal of a community by any individual demonstrates that person's subjective understanding of the community.

Community for many individuals connotes:

- the home base and immediate environments
- the availability of specific services
- security arising from familiarity
- friendship and social interaction
- the physical boundaries of the area.

The majority of non-disabled persons can move their home base with little trouble. They can easily tap into services in new areas and their friendships can continue without interruption, since many of their friends probably come from areas other than the immediate neighbourhood (work, school). Disabled persons, however, subject as they are to limited mobility and restricted by physical barriers, cannot move to a new environment as easily as those who are not disabled. Accessibility to housing, services and opportunities is not easy for them to find. They are also constrained by the high unemployment and low income associated with disability. Because it is more difficult for them to find a community in which they can live with at least some degree of accessibility, it is also difficult for them to uproot themselves.

To increase the possibilities for independent living for the disabled, it is necessary for urban planners to integrate the physical environment with the subjective one. Environmental accessibility alone is not enough. There are other essential components to independent community living for the disabled. Availability and access, therefore, should be measured by:

- usable and appropriate forms of transportation
- appropriate health care services and facilities
- social and community services and facilities
- appropriate educational facilities and opportunities
- employment facilities and opportunities.

Disabled persons are constrained by:

- the degree of their personal mobility
- the degree of physical accessibility
- lack of appropriate transportation
- lack of adequate income
- the lack of availability of subsidized housing
- the lack of availability of health and social services.

They are, consequently, frequently confined to a prescribed neighbourhood in which they find manageable components, "manageable" meaning ease of access and use.

The objective of this research report is to identify factors that limit the use the disabled can make of their community, and demonstrate ways in which barriers to accessibility can be removed.

Disability or Handicap

All too often, the terms "disabled" and "handicapped" are used interchangeably to identify the physical or mental condition of certain individuals. For the purpose of this document, we have adopted the United Nations definition of disability, which is:

> Any person unable to ensure by himself or herself wholly or partly the necessities of a normal individual and/or social life, as a result of a deficiency, either congenital or not, in his or her physical or mental capabilities.

We have further defined disability in functional terms as applying to those persons who are:

- non-ambulatory
- semi-ambulatory
- coordination disabled
- sensory disabled
- circumstance disabled
- mentally disabled.

We have consistently applied the World Health Organization's definition of "handicap," which is:

> The disadvantage that is consequent upon the impairments and disability. It represents the social and environmental consequences to the individual stemming from the presence of impairments and disabilities.

Given these definitions, it is fair to assume that a disability will become a handicap only in situations where adverse conditions exist in the physical and social environment.

3. THE EXTERIOR PHYSICAL ENVIRONMENT

ISSUE STATEMENT: DISABLED PEOPLE SHOULD BE ABLE TO HAVE ACCESS TO AND USE THE EXTERIOR PHYSICAL ENVIRONMENT.

Problems

Disabled people are denied access to the exterior physical environment because of physical barriers, administrative and legal barriers, and service barriers.

Physical Barriers

Physical barriers are associated with the inappropriate and inconsistent design and placement of:

- walkways
- curbs
- street crossings
- ramps
- stairs
- handrails/guardrails
- walls/fences
- gates
- bollards
- rest areas and amenities
- plantings
- obstacles
- lighting
- signs.

Administrative and Legislative Barriers

Administrative and legislative barriers include lack of agreement on policies, program implementation priorities, design criteria and funding.

There is a lack of uniform legislation on external physical barriers.

The responsibility for initiating barrier-free site planning is left to individual municipalities and is based on:

the perceived need, and attitudes and responses to that need;

the degree to which policies and programs have been developed, regarding accessibility;

the degree of new construction or renovation that is to be undertaken;

the economic framework for implementing adaptations.

Few legal mechanisms for enforcement or inclusion of accessibility standards exist within the general framework of site development and community planning.

Service Barriers

Many disabled persons have limited access to services in their community.

There is a lack of understanding or awareness of interactive accessibility issues at each level of government on the part of local administrators, urban planners, architects and designers.

Recommended Solutions

Physical Barriers: Recommended Solutions

The following design criteria are compiled from accessibility standards and guidelines selected from: Supplement No. 5 to the National Building Code of Canada; Part 10 of the Building Code for British Columbia and the "Accessibility Standard" for Saskatchewan.

Walkways

Walkways (natural or paved surfaces) should provide a smooth hard surface, which should be free of level changes, be non-slip under all weather conditions and be free of hazards.

Walkways should be at least 1.5 m in width; where less than 1.5 m, areas 1.5 m in length and 2 m in width should occur at intervals not exceeding 30 m.

Where large areas, or extensive stretches of small paving units are used, such as brick or stone, they should be laid on a firm base with joints flush with adjoining surfaces. Joints should not exceed 13 m in width.

Walks with gradients in excess of 1:20 should be considered as ramps, and conform to those criteria.

Walks with sustained gradients of no greater than 1:20 should be provided with level areas at designated intervals.

Where driveways or roads intersect pedestrian walkways, priority should be given to pedestrian movement.

Gratings, manhole covers, etc., occurring in walks, should not interfere with pedestrian flow or create hazards for those with visual or physical disabilities. Gratings and drains should be flush with travelled surfaces or walkway. Gratings should have no openings greater than 13 m and have bars at right angles to the direction of travel.

Walks should be level at building entrances. Where drainage is required, the area in front of the door may be sloped no more than 1:50. This area should extend a minimum of 1.5 m deep from the door face and a minimum of 500 mm on the handle side of door.

Immovable or solid objects or signs should not project into the walkway unless they are mounted 2.25 m above the walking area.

Where landscaping is adjacent to walks, care should be taken that planting does not intrude into the walk, or act as a source of hazardous debris (berries, nuts, for example).

Handrails/guardrails should be provided where necessary.

Curb cuts

Curb cuts should be provided through a curb or other low barrier between a road and pedestrian walkway.

Curb cuts should be provided at all road intersections and at driveways, entrances to parking lots and through traffic islands.

Curb cuts should be not steeper than 1:8 and should blend with the road surface (1:12 preferred).

All curb cuts should contrast in colour and/or texture to the surrounding walk surfaces.

Surfaces of curb cuts should be joint free, slip resistant and free draining in winter conditions.

Consistent design criteria for curb cuts should be adopted in any one municipality, and preferably region.

Street crossings

Street crossings are considered to be a continuation of walks and should satisfy the same criteria as walks.

The width of the crosswalk should accommodate two wheelchairs passing one another and terminate in curbed ramps to sidewalks.

Where the street crossings intersect with a traffic island, the surface of the island should blend to a common level with the crossing surface.

The surface of the crosswalk itself, and at the island, should be coloured or finished with textured cues, as an aid to the visually impaired.

Crosswalks should be constructed so as to be easily seen by both motorists and pedestrians.

Islands should be wide enough to prevent wheelchairs from protruding into traffic flow while waiting to cross; for example, a minimum of 1.2 m wide.

Guardrails, poles or other supportive devices should be provided on traffic islands as support for persons waiting to cross and should not intrude into the walking area.

Signal lights should be timed to permit the elderly and persons in wheelchairs to cross safely.

Signals should be designed so that glare from the sun or streetlighting at night does not interfere with use.

"Don't walk" signals are helpful. Crossing signs should be easily discernible. If push-buttons are incorporated into the system, the buttons should be placed within reach of persons in wheelchairs.

Auditory signals should be included as a supplementary aid to the visually impaired, advising when it is safe to cross.

Ramps

Ramps provide a sloped transition between levels, allowing persons in wheelchairs and others with mobility problems to negotiate level changes.

Approaches to ramps should be clear and level, to permit manoeuvres by wheelchairs, for an area of 1.5 m by 1.5 m.

Textural cues should be provided at both top and bottom of a ramp to warn the visually impaired of its location.

Ramp slopes should not exceed 1:12 (1:20 preferred).

Width of the ramps should allow two-way pedestrian flow where possible. The minimum width of any ramp should be 914 mm; 1.5 m is recommended in heavily used areas.

Ramps should be designed to carry a minimum live load of 4.75 kPa/m^2.

Ramps and landings should have an upstand edge on either side against which wheelchairs can be stopped. Wheelstops/guards should be a minimum of 75 to 100 mm high and 150 mm wide.

Intermediate landings should be provided, between ramp segments, where ramp exceeds 9.75 m. Such landings should be installed at intervals of a maximum of 9 m and measure at least 1.5 m long or be the same width as the ramp, if it is wider than 1.5 m.

Exterior ramp surfaces should be non-slip in all weather conditions.

Positive drainage of water from ramps must be ensured, and ramps should be maintained clear of ice, snow and debris at all times.

Ramps should terminate in areas free of water build-up at both top and bottom.

All ramps should be provided with handrails on both sides where possible. All handrails should extend at least 300 mm beyond the top and bottom edge of the ramp.

Stairs

Stairs are frequently easier to negotiate than ramps by elderly and semi-ambulatory persons. Stairs should be designed to minimize the amount of energy expended.

Designers should avoid the use of steps where less than three would be required.

All steps in a series should be of a uniform tread width and riser height.

Stairs should be designed with risers of a minimum of 160 mm and risers a maximum of 180 mm.

Stair treads should be deep enough to accommodate an entire foot. The preferred depth is 250 mm.

The surface of stairs should be slip resistant under all weather conditions.

The maximum height between landings may vary but in no case should exceed 2.7 m. Maximum height between landings for exterior stairs without handrails or lateral support is 1.2 m; where the stairs are protected a 1.8 m height is recommended.

Nosings should be rounded or chamfered and should be of contrasting colours to treads and risers. A rounded nosing is the most acceptable.

Textural cues should be provided at the sides of stairs.

The minimum clear width of any access stairway should allow for two-way pedestrian flow. Overall width should be 1.6 m or wider if traffic is heavy.

Every stair should have a handrail on at least one side.

Handrails should be provided on each side of a stairway and extend past the treads at top and bottom for a length of 610 mm to 1 m.

Stairways should be well illuminated to ensure safe usage at all times. Light should be cast downwards towards risers in order that treads are not thrown into shadow.

Handrails

Handrails and guardrails should provide continuous support throughout level changes on stairs and ramps.

Handrails should be continuous across landings.

Projecting fittings, joints, supports, etc., should not inhibit the continuous sliding of the hand over the entire length of the handrail.

Handrails and railing should preferably be round or oval in shape and comfortably fit the shape of the hand--40 to 50 mm in diameter.

Handrail extensions should be protected where possible, rather than be freestanding, against a wall, for example.

There should be 40 mm knuckle space between the rail and adjacent wall. Adjacent wall surfaces should be non-abrasive in texture.

Where handrails or railings are fully recessed into walls, a 150 mm space should be allowed between the top of the rail and top of the recess, and a space provided at the bottom of the rail and bottom of the recess.

The ends of the rails should be turned down or returned to the wall, to indicate the end of the handrail for the visually impaired.

The vertical dimensions from the ramp surface to the top of a single handrail should be between 810 and 900 mm.

Handrails should be placed on each side of a stairway and should be 840 mm vertically from the nose of the top treads to the top of the handrail; the distance from the top of the handrail to the landing should be 810 to 900 mm.

A second lower rail on ramps is advantageous to small children and to persons in wheelchairs. When two rails are used, the top rail should be placed at 900 mm to 1 m and the lower rail should be placed at 710 mm.

Free standing rails should be designed so as not to present a hazard to the visually impaired.

Changes in the handrail profile or direction provide a tactile cue to persons with visual impairments regarding the extent and/or direction of the stair.

Where the handrail leads to a potentially hazardous location, notches or knurling of the rail may be used to provide tactile cues for the visually impaired.

All unenclosed floor openings and open sides of landings, balconies, accessible roofs or porches should be protected by guardrails.

Walls

Low retaining walls may be used both to retain earth and to separate site functions and provide a number of secondary functions.

Low retaining walls are useful in providing surfaces to lean against, or as a surface to sit upon, preferred height being between 600 and 900 mm.

Low retaining walls should be of a height which permits those in wheelchairs, and others, to place packages on top, preferred heights being between 600 and 900 and 1200 mm.

Seat walls should be designed to accommodate those persons with physical disabilities or limitations, preferred height being between 450 and 550 mm and width 300 mm.

Where pedestrian walks are bounded by retaining walls which are 600 mm or more above adjacent areas, such walks should be protected with handrails.

Walls higher than 1.2 m should be provided with handrails, as an additional aid to disabled persons.

Wall surfaces adjacent to walkways should be free of any projections.

Where walls are located adjacent to walkways, care should be taken that weep holes do not drain onto walkway surfaces, unless positive drainage close to the wall is provided.

Drainpipes should not project onto adjacent walkways.

Gates

Gates located in exterior walkways should conform to the same criteria as doors.

Width of gate when open should permit wheelchair access; minimum width 860 mm.

Gates should have lever action latching mechanisms.

Where the gate is likely to receive heavy use, kick plates may be desirable.

Gates with self-closing mechanisms should be time delayed.

Force required to open a gate should not exceed 55 kPa, 35 kPa preferred. Automatic opening mechanisms should be considered.

Bollards

Bollards are frequently used as traffic control devices and should be appropriately sized and spaced to allow wheelchairs to pass between them, yet not present a hazard to the visually impaired. Minimum spacing of 910 mm is preferred.

Bollards should be colour contrasted to adjacent materials, and be well lit.

Rest areas

Rest areas should be provided along walkway systems over 60 m in length.

If recessed, resting spaces should be wide enough to provide space for a bench plus a wheelchair. Space beside the bench should be minimum of 1.2 m by 810 m to permit standing or transfer from a wheelchair; bench height should be 430 to 500 mm to allow transfer from a wheelchair with a heel space of 75 mm.

Arm rests are beneficial to some disabled persons as an added locational support, but should not be located on ends of bench.

Planting

Planting should be carefully selected not to create hazards to pedestrian travel.

Planting along walkways and at rest areas should not project into trafficked areas or be over 2.25 m in height.

Overhanging trees and shrubs should not drop excessive debris which may be slippery when wet onto pedestrian travel routes (berries, seeds, etc.).

Dangerous or thorny plants should not be located close to walkway systems.

Planting may be used as natural wind and sun barriers.

Plants may affect the melting of snow and ice from walkways and stairs and ramps and this must be considered prior to the actual planting.

Planting may be used to control pedestrian flow through public or hazardous areas.

Proper maintenance of all trees and plants is essential.

Obstacles

Signs, guy wires, parking meters and block heaters should not intrude into walkway systems where they might create a hazard to those with visual or mobility impairments.

All advertising, signs, waste receptacles, dispensers, post boxes, and other paraphernalia should be located adjacent to accessible walkway systems and should not intrude onto walkways. An amenity strip might be provided along the length of the sidewalk to accommodate such items.

The amenity strip should be distinguished from trafficked walkways by visual and/or textural cues as an aid to those with perceptual impairments.

Lighting

Lighting should accentuate stairs, handrails, ramps, facilities and obstacles. While the level and quality of light needed by persons with impaired vision may vary, even distribution of light, the elimination of glare and reflection, and the reduction of shadows, tend to improve an individual's ability to see. (A minimum of 50 lux candles is recommended externally.)

Overhead lighting provides a more even distribution of light than low level fixtures.

Fixtures should be placed so that light patterns overlap at a height sufficient to illuminate a person's body vertically.

Low supplementary lighting at walking surface or additional overhead units should be used to illuminate hazardous locations. Low-level lighting should be placed in such a way to eliminate glare.

Where walkway lighting is provided primarily by low-level fixtures, there should be sufficient peripheral lighting to illuminate the immediate surroundings.

Posts and lighting standards should be located so as not to interfere with pedestrian or vehicular traffic.

Shatter-proof fixtures should be used in locations prone to vandalism.

Administrative and Legislative Barriers: Recommended Solutions
(see figure 1)

The present system of community and social planning encourages public participation in the decision making process. Consequently, persons advocating accessible exterior environments can influence decision making.

Policies and physical design criteria, appropriate for all users, should be developed by a provincial body comprised of:

- representative from consumer organizations
- representatives from all levels of government
- representative from federal and provincial human rights commissions
- urban and social planners
- architects, designers and landscape designers.

An advisory committee should recommend criteria for incorporation into appropriate legislation.

Uniform, inter-government legislation should be developed and adopted; for example:

the federal government should incorporate research and advisory committees' findings into the appropriate legislation governing facilities and property which falls under federal jurisdiction;

planning acts within respective provinces should provide the necessary enabling legislation;

municipal bylaws should be developed to ensure implementation of legislation at the local level.

Legal enforcement mechanisms for all such legislation should be developed at the appropriate and local levels.

Service Barriers: Recommended Solutions

Improved knowledge and application of social planning as an adjunct to physical urban site development would ensure wider access to services and opportunities for disabled persons in residential and other urban communities.

Municipal development and other relevant departments should ensure that staff are familiar with, and supportive of, elements and strategies for social planning issues.

Education seminars and workshops on accessibility issues should be mandatory and on-going for all persons involved in the process of urban and social planning.

Inter-departmental communications and administrative mechanisms must be established to ensure that decisions reached by any department are understood and/or implemented and supported by other relevant departments.

Applied Solutions

Physical Barriers: Applied Solutions

Most municipalities already have policies (official or otherwise) to initiate required curb cuts automatically in areas under construction or renovation.

In Metropolitan Toronto, as a consequence of political pressure by disabled persons, The Mayor's Task Force Report: Re The Disabled and Elderly was initiated in 1973. The Task Force made recommendations to ensure that disabled persons would have access to all amenities and services in the City of Toronto. In addition, staff and direction continues to be provided by the city's planning and development department to oversee implementation of these recommendations at the local level. At the same time, other levels of government are encouraged to act on issues peculiar to their own jurisdictions.

Administrative and Legislative Barriers: Applied Solutions

Metropolitan Toronto's planning and development department developed a policy on "Accessible Site Development, Review Guidelines," which conforms to the Official Plan and zoning bylaws as detailed in the Planning Act (Ontario Section 40), which permits such review. As a result of this policy, it is now possible for the department to:

evaluate sites and estimate how proposed development will fit into existing environments;

establish conformity with the Official Plan and zoning bylaws;

encourage the development of housing units and commercial facilities for disabled persons;

monitor land and street-scape design.

Service Barriers: Applied Solutions

Research carried out during this study did not discover any applied solutions at the service level, although many provincial capital cities are discussing the formation of inter-government liaison committees.

Comments

There are now more than 700 provincial laws regulating how land can be sub-divided and developed and what can be built on it. Further, each province continuously amends existing laws and passes new ones every year. Often a province will introduce as many as 100 new land-use regulations in a year.

Because local governments have been assigned the power to regulate property within their boundaries, there are innumerable local regulations dealing with land development, sub-division, building and ownership.* As cities expand they also tend to absorb neighbouring communities, many of which have different land use standards and practices, further complicating the problem.**

One common process is, therefore, difficult to define, not only to the concerned consumer, but also to persons working within the provincial/municipal legislative and administrative framework.

Regardless of process of interpretation, however, certain aspects of community planning are common to all municipalities. For example, it is the "input" of information and/or pressure from the community and consumer advocates which determines the type and extent of "output" by the political decision makers (see figure 1).

While many municipalities have made attempts to eliminate exterior physical barriers, examples in this chapter have been drawn only from Metropolitan Toronto, and are intended to demonstrate consumers' ability to make an effective impact on decision making at the local level.

Unfortunately, there still are no legal mechanisms for enforcing the "Accessible Site Development Review Guidelines" within Metropolitan Toronto, and no formal system of appeal against inappropriate solutions.

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* Economic Council of Canada, Au Courant, Vol. 2, H2/81

** Ibid.

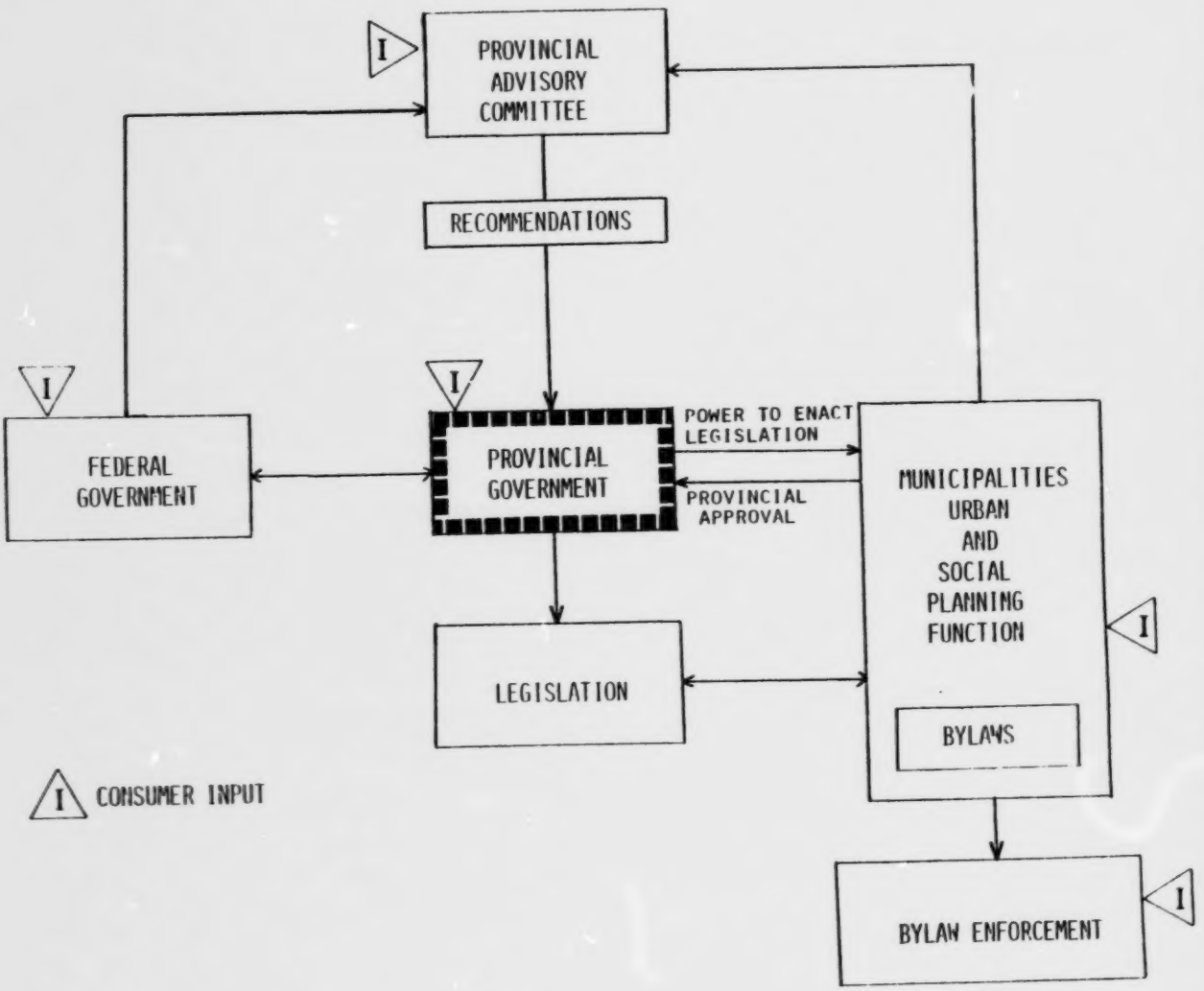

PROVINCIAL ADVISORY COMMITTEE
RECOMMENDATIONS
FEDERAL GOVERNMENT
PROVINCIAL GOVERNMENT
POWER TO ENACT LEGISLATION
PROVINCIAL APPROVAL
MUNICIPALITIES URBAN AND SOCIAL PLANNING FUNCTION
BYLAWS
LEGISLATION
BYLAW ENFORCEMENT
I
CONSUMER INPUT

Figure 1

4. PUBLIC TRANSPORTATION

ISSUE STATEMENT: DISABLED PERSONS SHOULD BE ABLE TO HAVE ACCESS TO AND USE ALL FORMS OF PUBLIC TRANSPORTATION

Problems

Disabled persons are frequently unable to use public transportation systems because the systems are inaccessible to them.

Physical Barriers

Physical barriers to the use of transportation are associated with the inappropriate and inconsistent design, location, or absence of:

- transit stops/waiting areas
- surface vehicles (buses/streetcars)
- stations
- subway cars
- parallel transportation systems
- drop-off zones.

Administrative and Legislative Barriers

Administrative and legislative barriers are associated with a lack of agreement on policy, implementation priority, design criteria and funding.

There is a lack of uniform design criteria for public transit systems and vehicles.

There is a lack of agreement on what constitutes accessible and usable transportation.

There is a lack of coordination between parallel and public transportation systems.

There is a lack of agreement on the economic and physical feasibility of retrofitting existing systems, including:

- the number and type of disabled persons requiring service
- the number of municipalities within the region introducing new services
- the extent to which disabled persons would use new or existing facilities
- the availability of capital and operating funding support
- the availability of staff to assist disabled persons.

Service Barriers

Many disabled persons have limited access to the services in their community because of:

lack of accessible and usable transportation;

lack of awareness of accessibility issues at all levels of government, the general public, employees of the various transportation systems, architects, engineers, industrial designers, and so on;

eligibility criteria, based on the purpose of the trip, and whether it is a regularly scheduled trip or not;

inappropriate location of transit stops (for example, the distance between stops);

special charges for parallel transit services;

irregular services and time delays;

poor cooperation between various transit services.

Recommended Solutions

Physical Barriers: Recommended Solutions

Transit stops (waiting areas)

Waiting areas for public transportation are possibly the most common of all exterior waiting areas and should be large enough to accommodate the average number of people normally using them.

Transit stops (waiting areas) should be provided with adequate signs and information giving route information, times of service, etc.

Where possible, seating should be provided with space allotted alongside to place and/or facilitate transfer from a wheelchair, conforming to all criteria for same.

Where possible, overhead shelter from inclement weather should be provided.

Vertical canopy supports should be located out of the way of pedestrians using or passing by the waiting area.

If the area is enclosed, adequate space should be allotted for easy movement into and through it.

The waiting areas should be designed to enable individuals using the space to view oncoming traffic and the arrival of their vehicles.

Loading areas should not have a curb. If a curb is unavoidable, an appropriate curb cut is required.

Surface vehicles

Entrance steps to streetcars should be lowered 100 mm.

An operator-activated kneeling feature, enabling the front step to be lowered 100 mm, should be installed on all buses.

Additional handholds, grab rails or extending handrails should be provided as an aid to disabled persons mounting and disembarking from the bus or streetcar.

The size of the opening on all fare collection boxes should be increased as an aid to those persons with limited hand and arm movement.

Special seating should be provided adjacent to the entrance of the vehicle for use by disabled persons. Such seating may be a flip-up type of seat, used only when required.

A minimum clear aisle width of 900 mm is required.

Floor surfaces of vehicles should be non-slip.

Sliding doors with a minimum clear width of 900 mm are preferred.

Graphic and audio communications must be adequate for those with perceptual impairments, for example: stop identification, maps of travel routes.

Stop request cords should be easily accessible to those with limited hand and arm movement.

Doors of vehicles used by disembarking passengers should be time delayed, permitting adequate time to disembark safely.

Stations

All areas in stations (doors, corridors, stairs, etc.) should conform to accepted criteria for such public buildings. (See Section 6, under Physical Barriers: Solutions.)

Consideration should be given to installing doors at subway entrances that are capable of withstanding the increased air pressure generated by subway train operation.

Door dimensions and door hardware should conform to all criteria for public buildings. (See Section 6, under Physical Barriers: Solutions.)

Where turnstiles and other restricted passageways are provided, an alternative route should be available to the physically disabled, or mechanisms should be adapted for use by wheelchair users.

Fare collection boxes should be equipped with a funnel which connects with the existing box opening, as an aid to disabled persons when depositing their fare.

Signs and information sources should be easily legible to those with perceptual impairments, and be supplemented with secondary information sources as required, for example: audio information, TTY.

Accessible public washrooms should be available to disabled persons at subway stations and conform to criteria for such. (See Section 6, under Physical Barriers: Solutions.)

Public telephones should be available to disabled persons at subway stations and conform to criteria for such. (See Section 6, under Physical Barriers: Solutions.)

Resting rails should be considered as an aid to those with limited physical endurance. Such rails should be positioned at appropriate intervals throughout pedestrian walkway systems.

Consideration should be given to providing additional seating on the station platform as an aid to disabled persons. Seating should conform to acceptable criteria.

Where possible, elevators should be provided to accommodate vertical level changes and conform to requirements for such. (See Section 6, under Physical Barriers: Solutions.)

The installation of special platform markers and/or sign displays to indicate street and platform positions should be considered, and signals and markings to notify of arriving vehicles.

Subway cars

Door openings should be level and flush with the platform edge.

Doors opening and closing mechanisms should be time delayed to permit disabled persons to entrain and detrain safely. Audio and visual alarms should be given prior to doors closing.

Specially designed seats should be provided for disabled persons. Such seats may be of the flip-up type which fold flat when not in use.

Additional handhold supports should be provided at critical locations.

Improved visual and audio in-car station identification systems should be developed, for example, audio station announcements and identification, maps.

A passenger emergency alarm should be mounted at a height suitable to those with limited hand and arm movements, and for those in wheelchairs requiring assistance.

Parallel transportation systems

Every vehicle for physically disabled passengers should have at least one door for passenger access and an emergency exit door; these should be located on different walls of the vehicle.

The emergency exit door should be operable from both inside and outside the vehicle (for example, near to the right side of the vehicle). Doorways should provide a clear horizontal opening of 820 mm.

Each vehicle should have an interior mirror designed to provide the driver with a view of the passengers.

Lights should illuminate all of the interior of the vehicle and should be on constantly during the loading or unloading of passengers.

A light should be provided above or beside each passenger access door or step of special transit vehicles to illuminate the loading of wheelchair passengers. Such lights should be on constantly during loading or unloading.

Step nosings should be identified (for example, yellow or white edging).

Each passenger access door or emergency exit door that could be subject to unintentional closing during the loading or unloading of passengers should be equipped with a means of securing in an open position.

The vehicle interior should be free of any sharp projections that may be a hazard to passengers.

Floor covering that is fire-retardant rubber or equivalent material, skid-resistant, wear-resistant and ribbed, should be provided.

All vehicles should conform to Canada Motor Vehicle Safety Standard 302 regarding flammability.

All vehicles should be equipped with at least one dry chemical fire extinguisher.

All vehicles should have holding-down equipment (devices) for wheelchair users, securely fixed to the framing.

Every loading ramp should:

- have a skid resistant surface
- have raised edges of sufficient height to prevent a wheelchair from rolling off the edge of the ramp during the loading or unloading of passengers
- be secured by means other than a support or lug in the door while the vehicle is operated on a highway

Every power lift should:

- have a skid resistant platform surface
- have raised edges on two sides and a retractable lip on the side intended for loading of sufficient height to prevent a wheelchair from rolling off the platform during vertical operation of the lift
- be secured by means other than a support or lug in the door while the vehcile is operated on a highway
- ensure headroom clearance into the vehicle in the high position.

Wheelchairs should be equipped with securement devices which:

- can be securely anchored to the vehicle
- are capable of withstanding a load in any direction of not less than 11120 N for a period of 10 s. (Ontario Ministry of Transportation and Communication, Highway Traffic Act, Ontario Regulation 167/81.)

Every designated secured wheelchair position should be provided with an additional pelvic-type of occupant seat-belt which is:

- securely anchored to the vehicle or capable of securing a wheelchair occupant to his wheelchair by encircling both the occupant and wheelchair
- capable of withstanding a load in any direction of not less than 11120 N for a period of 10 s. (Ontario Ministry of Transportion and Communication, Highway Traffic Act, Ontario Regulation 167/81.)

Drop-off zones

Designated drop-off zones are necessary to allow disabled users to be dropped off as close as possible to a main accessible entrance. Care should be taken to ensure a safe route from the vehicle, with enough space for the user to get in and out of the vehicle and to effect a safe transfer.

The width of the drop-off zone should be wide enough to allow the car doors to be fully opened for easy access. A minimum of 3.6 m is necessary.

The length of the zone should accommodate at least two vehicles, and should provide gradual access to main entry points. The zone should allow 7.5 m for each vehicle.

Should the zone be at the same grade as the adjacent walk, a distinct separating device should be used to separate the two functions (material change, colour or bollards).

Where curbs exist, curb cuts or a ramp for each space should be provided.

Where possible, protection from inclement weather should be provided over the loading zone area.

Signs should be provided to identify and limit the uses of the zone.

Zones should be provided with adequate illumination.

Administrative and Legislative Barriers: Recommended Solutions (see figure 2)

Improved transportation legislation, uniform design criteria and provincial/municipal consensus on policy and implementation would ensure wider access to community services and opportunities by disabled persons.

"Reasonable access" should be defined in a manner which is both acceptable and appropriate to disabled persons, and lends itself to economically feasible solutions.

A uniform policy on transportation for the disabled should be developed in consultation with disabled consumers. This policy would provide reasonable access to public transportation systems falling within provincial/municipal jurisdictions, at reasonable cost.

The policy should include standardized design criteria for accessible transportation and establish provincial/municipal programs and priorities.

Legislative provisions for the retrofit of existing transportation systems should be developed.

Parallel transit services should be available to all disabled persons in need of such services, regardless of trip purpose.

Parallel transportation systems should be funded and operated by established public transportation systems, or as an adjunct to such systems, with routes and systems which interact appropriately.

Service Barriers: Recommended Solutions

All public transportation system employees should be required to participate in ongoing programs designed to sensitize them to the needs of disabled persons and train them in assisting disabled persons.

An information program should be developed for "transportation disabled" persons to help familiarize them with accessible transportation facilities and services.

Transportation for the disabled should be provided at the same cost as other public transit services.

A spatial analysis program should be employed (to develop a network flow model) in order to allocate transit services more appropriately. Such a program could be applied in the urban setting while lending itself to adaptation for rural use. Transportation authorities should assume responsibility for the development and application of the program.

Applied Solutions

Physical Barriers: Applied Solutions

The Edmonton Rapid Transit System provides limited accessibility via ramps and elevators for some disabled passengers. Some personal assistance is provided to disabled passengers by fare collectors.

In 1975, the Disabled Adult Transportation System (DATS) was initiated in Edmonton to provide a parallel transportation system for the disabled.

The service is available to anyone over 16 years of age. Registration for the service at least 24 hours in advance is necessary. It operates 7 days a week, from 6:30 a.m. to midnight.

DATS provides three basic types of service:

Subscription: the service must be booked in advance; to qualify, the trip must occur at least once a week and must occur repeatedly. Subscription service accounts for about 80 per cent of all trips;

Reservation: occasional trips booked at least 24 hours in advance;

Charter: trips available to groups who wish to travel together to social or other outings.

DATS is sponsored provincially through per capita grants. It is limited however, to the geographic boundaries of the Old City limits.

The City of Edmonton subsidizes other systems that provide limited service:

"Paravan" provides taxi services at metro rates; trips must be pre-booked 48 hours in advance and there is an additional cost for persons in wheelchairs and on stretchers;

"Caravan" provides a similar service but operates 24 hours a day.

Other services include:

- ACT Rundle Park buses, for Act for Special Regulation events
- Lions Club buses available for outings
- nursing home and auxiliary buses.

All services are provided at cost to the user. There have not been any successful attempts to coordinate these services with the para-transit systems.

Medicine Hat, Calgary and Camrose provides para-transit systems similar to DATS. Grand Plains has a rudimentary service with buses available to the disabled during school hours only on certain days of the week.

The Custom Transit Services Program, developed by the Urban Transit Authority of British Columbia, attempts to ensure that no one is denied the opportunity to use community services or take business or social trips because suitable transportation is unavailable. For those requiring door-to-door service, a system known as "Handy Dart" has been established. The users of this service pay the standard fee required on all British Columbia public transit. Special provincial grants are provided to supplement the user fee.

In addition to Dart, a small number of regular buses in Victoria have been equipped with platforms which lower to curb level (kneeling buses) to lift wheelchair users and those with other disabilities, onto the bus. In addition, the first two forward seats are equipped with wheelchair locks and the seats immediately behind the driver are reserved for the elderly and the disabled.

Wheel Trans in Toronto is funded equally by the Ontario provincial government and the municipal government. The Toronto Transit Commission administers the service, but contracts out to a private company which supplies vans and drivers. The majority of users are ambulatory, often walking with the assistance of canes and walkers. Fifty-one per cent of the users are senior citizens suffering from such ailments as arthritis and Parkinsons disease. There are also a number of users confined to wheelchairs. The service is available only to individuals, not groups, and only for certain trips.

In 1980, The Technical Advisory Committee on Improved Accessibility (TACIA) in Toronto was responsible for ensuring that the following changes were implemented:

- additional handholds at entrance doors of trolley coaches
- additional modified-design benches and replacement of existing benches with the modified design in subway stations
- talk-through communications at collectors' booths and subway stations
- experimental program to test coloured/textured warning strips on subway platform edges.

In its report, Improved Transit Accessibility for the Handicapped and Elderly, December 1980, TACIA makes further recommendations for change. It ranks changes in order of consumer and economic priority and give an indication of cost of retrofit relative to recommended changes.

The Canadian Rehabilitation Council for the Disabled (CRCD) published a directory, Urban Transportation Services for Physically Disabled Persons in Canada, in December 1981. This publication provides a valuable resource to disabled travellers across Canada on urban transportation services available to and usable by them.

The Ottawa-Carleton Regional Transit Commission Para Transpo Services provides transportation to the disabled for work, medical and post-secondary-school purposes. Preregistration is required for routine transportation needs.

Administrative and Legislative Barriers: Applied Solutions

The Urban Transit Authority of British Columbia was established by the provincial government in 1978 to ensure a uniform provincial policy for urban transit.

A Custom Transit Services program has been developed by the Urban Transit Authority of British Columbia to guide and direct existing options for the provision of transit services for the disabled. "The Authority is authorized to respond to requests from municipalities or regional districts and to assist them in examining the feasibility of introducing a door-to-door demand-responsive service for the disabled in their community." The Authority assists with financial planning and technical assistance, but decisions about service levels and fares are provided at the local level.

The Canadian Rehabilitation Council for the Disabled (CRCD) passed a resolution in 1974 which stated that, "all transportation for handicapped persons should pass from a charity base to a tax supported base."

The Saskatchewan Government subsequently responded to this resolution by developing a policy on urban transportation for the disabled which provides equitable cost sharing for municipalities.

Comments

In terms of accessibility to all other services, transportation is an essential service. Restrictions to mobility imposed by inadequate or inaccessible transportation seriously affect the economic and social life of disabled persons.

Although there have been a number of studies of various transit systems across North America on the subject of accessibility, and necessary improvements have been well documented or implemented, or both, present transportation systems are still inadequate to meet current demand by disabled users.

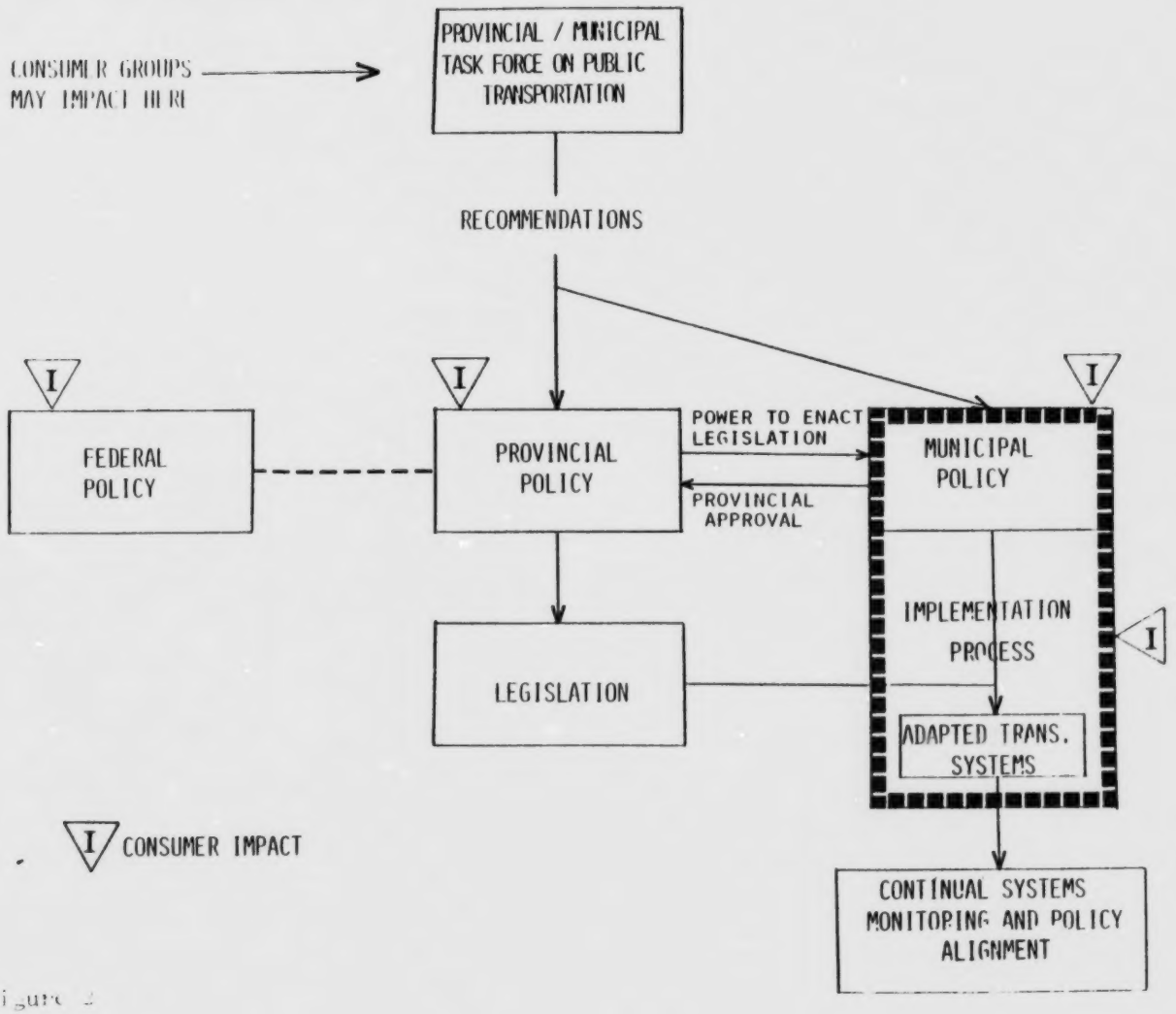
Lack of agreement of accessibility issues and economic considerations have led to varying degrees of acceptance and implementation of changes that would extend or improve present service options to disabled persons.

There continues to be a lack of consensus by the municipalities on what constitutes accessible transportation, whether it would be used and whether or not it would be economically feasible.

The primary concern of advocates for improved transportation services for disabled passengers has always been that of providing an "effective" service. This, by definition, implies a service that is "equivalent in its effect," rather than one totally accessible public transportation system. Despite modifications to older systems, there will always be some disabled persons whose needs are best met by alternatives to traditional public transit systems.

Parallel systems that are cost shared provincially and municipally are a viable alternative. However, the planning and implementation of such systems is generally left to the municipalities. The current lack of coordination between alternative and public transportation systems is a major problem. Unless all systems interact, disabled persons will continue to be limited by their degree of mobility. For example, the Bay Area Rapid Transit System (BART), serving the San Francisco area, is the most accessible subway system in the world, yet disabled persons have no effective means of connecting with it, since other related transportation systems are neither accessible nor designed to interface with BART.

Most problems confronting disabled persons are interrelated and the elimination of one barrier frequently leads to the elimination of others. As transportation becomes more accessible and usable, either through subsidization of special systems or the adaptation of existing ones together with the coordinated interaction of such services, all other areas of an individual's public and private life become more accessible and usable.


CONSUMER GROUPS MAY IMPACT HERE
PROVINCIAL / MUNICIPAL TASK FORCE ON PUBLIC TRANSPORTATION
RECOMMENDATIONS
I
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PROVINCIAL APPROVAL
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MUNICIPAL POLICY
IMPLEMENTATION PROCESS
I
ADAPTED TRANS. SYSTEMS
LEGISLATION
I CONSUMER IMPACT
CONTINUAL SYSTEMS MONITORING AND POLICY ALIGNMENT

Figure 2

5. PRIVATE TRANSPORTATION AND PARKING FACILITIES

ISSUE STATEMENT: DISABLED PERSONS SHOULD HAVE WIDER ACCESS TO, AND USE OF, PRIVATE MODES OF TRANSPORTATION AND RELATED PARKING FACILITIES

Problems

Disabled persons are frequently limited in their use of private transportation by physical barriers, administrative and legislative barriers and service barriers.

Physical Barriers

Physical barriers to the use of private transportation are associated with the inappropriate or inconsistent design, or the absence of:

- privately owned/operated vehicles
- parking facilities.

Administrative and Legislative Barriers

Administrative and legislative barriers include lack of agreement on policy, implementation priority, design criteria and funding.

There are at present no standard specifications or guidelines for adapting automotive controls.

There is a lack of policy on levels of safety, quality and performance to aid manufacturers and installers of driving aids.

The cost of retrofitting privately owned or operated vehicles is prohibitive.

There is a lack of uniform provincial/municipal legislation governing the design and operation of taxis. Taxi services in most Canadian cities are regulated by local governments - usually through municipal commissions. Although taxi regulations vary enormously across the country, nearly all have the same effect - they create monopoly situations by sharply limiting the number of cabs that may operate in any given area; they may also include policies regarding passengers.

There is lack of uniform legislation at the local level governing parking bylaws and enforcement mechanisms.

There is a lack of uniform design criteria for parking areas and facilities.

Service Barriers

Many disabled persons have limited access to private transportation services in their community because of:

a lack of understanding or awareness of total accessibility issues at each level of government on the part of local administrators, urban planners, architects, industrial designers, car manufacturers and the general public;

the lack of driver training and awareness about the type of assistance required by disabled persons in transferring to and from taxi cabs;

the high cost of taxi services to disabled persons as an alternative form of transportation;

lack of experienced mechanics and engineers to design and maintain specially adapted vehicles.

Recommended Solutions

Physical Barriers: Recommended Solutions

Private owner/operated vehicles

All vehicles adapted for use by disabled persons should be equipped with an automatic transmission.

All vehicles adapted for use by disabled persons should be equipped with power brakes, steering, locks and window mechanisms.

Where possible, vehicles should be equipped with an air conditioning system.

Hand and floor controls and other driving aids should be custom manufactured for individual makes of vehicles.

Driving aids should be in easy reach of the disabled driver when lap and shoulder seat belts are securely fastened.

Driving aids should be designed not to reflect sunlight into the driver's eyes and to reduce glare.

If the installed driving aid is a brake and acceleration hand control system, it should be designed to remain in neutral when not being used.

The motions required to actuate brake and accelerator should be designed to be distinctly different.

All passenger cars should be equipped with front bucket seats.

Seat adjustment controls should be easily accessible and operable by those with limited hand and arm movement.

Adequate leg space should be provided.

Space provided between front and rear seats should be sufficient to accommodate a folded wheelchair.

Consideration should be given to removing the rear seat in passenger vehicles to provide greater storage space for wheelchairs.

When possible, the transmission hump between front seats should be eliminated or reduced; this has been achieved in some front wheel drive automobiles.

Consideration should be given to the installation of a driver operated hydraulic arm that would lift the wheelchair (as required) to and from a storage area located on the roof of the car.

Where the disabled person is accompanied by a non-disabled driver (attendant or taxi driver), a wheechair-carrying device could be installed on the rear of the car. In addition, consideration should be given to providing adequate space for wheelchair storage in the trunk of the vehicle.

Van-type automobiles should be adapted for use by those persons unable to transfer from their wheelchairs into standard passenger vehicles.

A driver controlled automatic rear-loading or side-loading electrically driven lift or hoist should be installed or incorporated into the vehicle's structure, with side loading being preferred. All lifts should conform to accepted criteria for such. (See Section 4, under Physical Barrier Solutions).

Consideration should be given to hinging the reinforced side-loading door for wheelchair entry and exit.

The side loading doors should be raised an additional 250 mm. Such doors should be provided with a securing mechanism to prevent premature opening or closing.

The interior height of the van should be increased to 1.9 m to accommodate persons in wheelchairs.

Wheelchair tie-down systems should be installed which conform to all accepted criteria. (See Section 4, under Physical Barrier Solutions.)

Interior lighting should conform to all accepted criteria as outlined in Section 4, under Physical Barrier Solutions.

Floor covering should be non-slip under all conditions.

Parking facilities

Parking areas should be located as close as possible to a main accessible entrance, and ensure a safe level route to the building entrance or elevator within the building. Such areas should preferably be no more than 30 m from the building entrance. Parking spaces may be located both inside and outside of buildings, in parking lots and passenger loading zones.

Designated pedestrian routes, free of obstacles and other traffic, should be clearly established and marked between parking location and facility entrance.

Spaces of greater width than normal are required for disabled persons using mechanical aids such as wheelchairs, walkers, or crutches. A minimum of 3.6 m is required.

An aisle should be provided between cars for access alongside the vehicle. A minimum of 1.2 m should be provided between rows of cars parked end to end. Overhang of vehicle should be taken into consideration. At least 2.4 m is recommended for an on-grade aisle and 3 m where the aisle is raised above parking level.

Reserved parking for disabled persons should be in direct ratio to the number of parking spaces provided; 2 for every 100 is recommended.

Parallel parking spaces should be located adjacent to an accessible walkway system. Such spaces should be 3.6 m wide and 7.3 m long.

If a level change must be negotiated, curb ramps must be provided from the parking area to the walkway; 1:6 curb ramps are preferred.

If the parking area is level with the adjacent walkway, bollards should be provided. (See Section 3, under Physical Barriers Solutions.)

Where canopies or overhead supports are provided, and in public parking garages, a minimum headroom of 2.4 m should be provided for the circulation and parking of vans used by physically disabled persons.

Signs should be developed which adequately identify reserved parking and its restricted usage.

Administrative and Legislative Barriers: Recommended Solutions (see figure 3)

Improved legislation and uniform design criteria for parking facilities and private modes of transportation will ensure wider access to services and opportunities in the community for disabled persons.

The federal government, through Transport Canada, should assume the responsibility for developing an official policy on minimum levels of safety, quality and performance, and of driving aids and other automotive adaptations for disabled persons. This policy should be used as a guideline for the development of standard specifications for such adaptations.

A set of standard specifications for automotive controls and adaptations for disabled persons' vehicles should be developed for each make of car. The specifications should be jointly developed and tested by:

- individual Canadian car manufacturers
- the Canadian Car Manufacturers Association
- suppliers of special automotive components (for example, driving aids)
- Transport Canada.

Special adaptations to controls should be usable in most standard cars and should be interchangeable.

Funding should be made more easily available to disabled persons wishing to retrofit their own vehicles. Such funding could be provided on a cost-sharing basis by the provincial and municipal governments and be made available through vocational rehabilitation centres.

Provincial governments and municipal commissions governing the regulation of taxis should develop uniform legislation governing the regulation and licensing of taxis, in an attempt to:

- bring down the cost to the passenger for this service to a more economically feasible level
- encourage municipalities to subsidize taxi services for disabled persons.

Uniform design criteria for disabled persons' parking facilities should be developed.

Uniform legislation governing design, placement and enforcement of on-street parking should be developed at the municipal level through local bylaws.

Service Barriers: Recommended Solutions

Improved knowledge of the particular problems faced by disabled persons in the use of private transportation and related parking facilities could ensure more appropriae and easier access to services in the community.

Car manufacturers, suppliers, all levels of government and the general public should have continuing access to information on the disabling conditions which must be accommodated, either through design or legislation, in the promotion of private transportation for the disabled as a viable alternative to urban and parallel transportation systems.

Grants and subsidies should be made available to taxi services wishing to adapt their vehicles or train their drivers to provide a more appropriate service to disabled persons.

Municipal driving permits for the physically disabled should be available to drivers and designated attendants who operate vehicles for disabled persons. The permit should be prominently displayed at all times on the dashboard of the car. Consideration should be given to issuing different coloured permits to distinguish between temporarily or permanently disabled drivers. The permits should include:

permission to park in areas reserved for disabled persons;

an extended time limit in parking areas which are ordinarily time limited;

permission for night street parking, where no alternative is available;

exemption from parking prohibitions, other than those established for safety reasons, for a pre-determined period of time;

permission to stop in "non-stopping" areas to discharge disabled passengers;

permission to use boulevard parking, if appropriate, in areas where bylaws would ordinarily prohibit such.

Local police officers and parking lot attendants should be given the authority to police and enforce the "disabled parking only" bylaws.

Police officers should be empowered to issue parking violation tickets to non-disabled persons parking in designated areas in private parking lots.

Applied Solutions

Physical Barriers: Applied Solutions

Transport Canada's Transportation Development Centre in Montreal is currently developing and testing transferable adaptive automotive controls for disabled persons. It is hoped that such controls will eventually extend to disabled persons the same option to rent automobiles while travelling throughout Canada that is now extended to non-disabled persons.

The Saskatchewan Council for Crippled Children and Adults currently manufactures and installs hand and foot controls and other driving aids for disabled persons in Saskatchewan. All automotive aids are custom manufactured for individual vehicles. Eligibility for this service is established by a physician and the cost of the service is shared by the individual, Special Benefits Plan, Saskatchewan Aids for Independent Living (SAIL) and the Workman's Compensation Board.

Transport Canada's Transportation Development Centre (TDC) sponsored a project in which a Datsun station wagon was modified and tested during a high-mileage 18-month period. The test clearly indicated that this type of transportation option is a valid alternative to urban and parallel systems.

The TDC has also been involved in an innovative taxi development project for urban and rural para-transit use.

Volvo manufacturers have developed a car which is custom designed with built-in hand controls.

Administrative and Legislative Barriers: Applied Solutions

The Municipal Act of Ontario contains enabling legislation which permits bylaws to be passed which can provide special permit parking privileges to physically disabled persons.

The Regional Municipality of Ottawa-Carleton has recently amended its traffic and parking bylaws to extend further protection and privileges to disabled drivers by, among other things:

> providing a more flexible interpretation of "physically handicapped person," "physically handicapped permit," and "public parking area";

allowing owners of a valid permit to stop in "no-stopping areas" for the purpose of receiving or discharging disabled passengers;

establishing that 1 per cent of all available parking spaces in any given public parking area should be reserved and identified as being for use by disabled drivers;

enabling parking area owners and operators to ensure prompt removal of any non-disabled driver's vehicle from reserved space;

providing enforcement of proper use and upkeep of reserved parking by establishing a fine for contravention of the parking bylaws.

Service Barriers: Applied Solutions

During the course of this study, no applied solutions to service barriers were uncovered; some municipalities are, however, undertaking snow clearing from sidewalks and driveways for disabled owners and tenants.

Comments

Since most public transportation systems are currently inaccessible to and/or unusable by disabled persons, automobile travel is seen by many as a viable alternative. While the cost of adapting automobiles is expensive, it is negligible compared to the cost of providing subsidized parallel services or retrofitting existing urban transportation systems.

For many people, including the disabled, taxis are a necessary substitute for a private automobile and a much needed complement to urban mass transit systems.

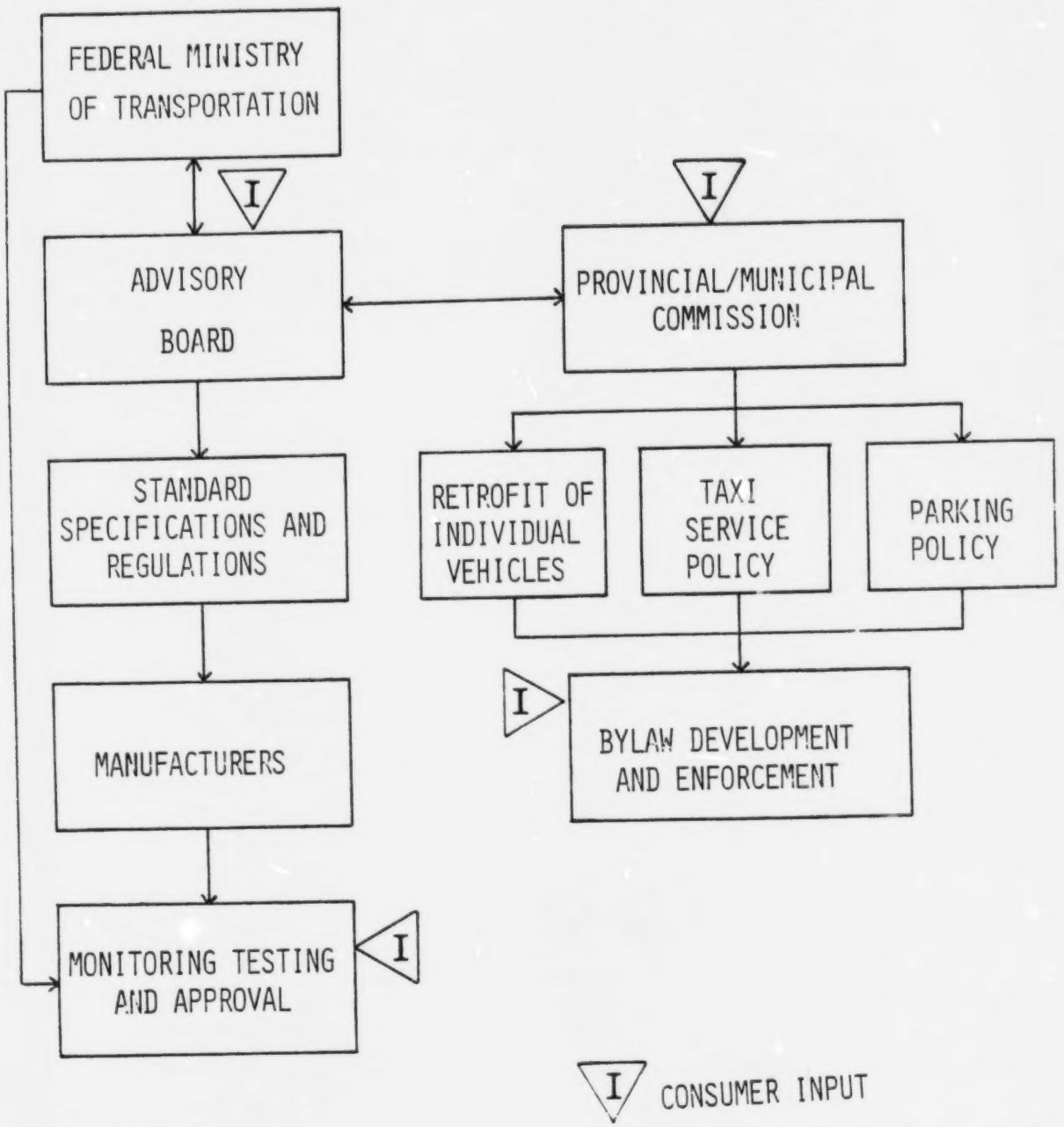
Government subsidies for mass transit result in consumers paying only between 45 and 80 per cent of the real cost of the services provided. The users of taxis, on the other hand, bear not only the entire cost of the service but are subject to an additional charge brought about by the limitations on taxi licences. New operators purchasing licenses pass the market cost of licencing onto the consumer. This hidden charge can represent between 5.1 per cent (in Montreal) and 21.1 per cent (in Vancouver) of a taxi fare. This amounts to millions of extra dollars each year that consumers pay to taxi operators because of current regulations.

Despite heavy subsidies, the ability of mass transit systems to meet the needs of specialized groups of users is decreasing. At the same time, the use of taxi transportation by these groups has

increased despite the regulatory climate. The cost of using taxis could be greatly decreased and their use greatly increased by basic changes to regulations controlling their operation and licencing.

Taxi services in most Canadian cities are regulated by local governments, usually through municipal commissions. Only Quebec has an overall law governing the regulation of taxis in its cities. In Manitoba, the provincial government retains regulatory control over taxis in Winnipeg.

Although taxi regulations vary enormously across the country, nearly all have the same effect--they create monopoly situations by sharply limiting the number of cabs that may operate in any given area. Most also discourage the use of taxis by more than one passenger a trip, maintain fees at rates that far surpass the actual cost of the service, and effectively limit the numbe of jobs available in the industry and the income of drivers who rent vehicles from taxi operators. The result is high cost and inefficient use of taxi services by disabled persons.


FEDERAL MINISTRY OF TRANSPORTATION
I
ADVISORY BOARD
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PROVINCIAL/MUNICIPAL COMMISSION
STANDARD SPECIFICATIONS AND REGULATIONS
RETROFIT OF INDIVIDUAL VEHICLES
TAXI SERVICE POLICY
PARKING POLICY
MANUFACTURERS
I
BYLAW DEVELOPMENT AND ENFORCEMENT
MONITORING TESTING AND APPROVAL
I
I CONSUMER INPUT

Figure 3

6. PUBLIC BUILDINGS AND FACILITIES

ISSUE STATEMENT: DISABLED PERSONS SHOULD BE ABLE TO HAVE ACCESS TO AND USE ANY PUBLIC BUILDING OR FACILITY THAT IS OPEN TO COMMON OR GENERAL USAGE.

Problems

Many disabled persons cannot use services and amenities in public buildings and facilities because of physical barriers, administrative and legislative barriers and service barriers.

Physical Barriers

Numerous components in public buildings and facilities are inappropriate or inconsistent in design and/or placement, or are absent, among them:

- primary entrances and vestibules
- exterior and interior doors and doorways
- door hardware
- corridors
- floors
- stairs
- elevators
- egress
- signs
- telephones
- washrooms
- drinking fountains
- controls, dispensers and waste receptacles
- barriers peculiar to certain types of buildings and services.

Administrative and Legislative Barriers

Administrative and legislative barriers include lack of policy and inconsistency in implementation, programs and priorities.

Current legislation at all levels of government is largely permissive and there are, therefore, no effective mechanisms which ensure adoption of the National Building Code of Canada and Supplement No. 5 to the National Building Code of Canada by the respective provinces.

There are no uniform design solutions, since each province supplies its own criteria and interprets differently the scope of Supplement No. 5.

The degree to which buildings are currently required to be accessible and usable is usually limited to, for example, the ground floor, wheelchair access, and specific occupancies.

The types of buildings required to be accessible by the various provincial building codes are unnecessarily restrictive and limit the type of facility disabled persons can use either as employees or visitors.

Adjacent areas surrounding public buildings (sites) are not generally required to be made accessible under existing legislation.

Little or no provision is made within the respective provincial codes for persons suffering from visual or auditory impairment.

Recommendations in the National Building Code of Canada and the provincial codes apply primarily to new construction and federally owned buildings.

Enforcement or monitoring mechanisms are currently ineffective at the local level, and there is no recourse against failure to comply.

Service Barriers

Disabled persons are limited in their ability to use the services and opportunities in their community as a consequence of:

a lack of knowledge, consistent understanding and commitment to accessibility issues by all levels of government, educators, planners, employers and service providers;

a lack of funding or other financial incentives which would enable building adaptation, the purchase of vocational and educational aids, and staff training.

Recommended Solutions

Physical Barriers: Recommended Solutions

The following design criteria are a compilation of design solutions selected from Supplement No. 5 to the National Building Code, British Columbia Building Code: Part 10, Ontario Building Code: Part 5 and the "Accessibility Standard" for Saskatchewan.

Primary entrances and vestibules

Entrances should be located at street level. Where this is impractical, ramps should be provided.

Entrances should be wide enough to permit access by those in wheelchairs. A minimum of 810 mm clear space between the open door face and the door jamb is required.

Entrance doors should be operable by a simple and single effort.

Where there is a vestibule, space must be provided to permit wheelchair manoeuvrability. Where doors are opposite each other, the dimension between doors in sequence should be a minimum of 2 m; minimum dimensions in other directions should be 1.5 m.

Exterior and interior doors and doorways

All doors should be operable by a single effort. Door opening pressure should be low enough for those with limited arm strength. Doors should be balanced to require a minimum of 53 N for exterior hinged doors and 22 N for interior hinged, sliding or folding doors (Saskatchewan Accessibility Standards).

Delayed action door closers should be provided, permitting door to remain open for a minimum of five seconds before beginning to close. Door closure should be adjusted so that the door will close in a minimum of three seconds from an open position of 70°.

Where turnstiles or revolving doors are provided, an accessible entrance way should be placed immediately to one side of the revolving door or turnstile.

Door swings, or doors in series, should open in a constant direction of travel and constant swing.

Where double doors are used, at least one leaf should permit wheelchair access and allow a minimum of 810 mm clear opening.

Where sliding doors are used, the opening should be usable from both sides.

Automatic swing doors should not intercept lateral pedestrian flow, unless guardrails or other protective devices have been provided to cover the full width of door swing.

The floor surfaces on the inside and outside of each doorway should be level for a distance of 1.5 m from the door in the direction of the door swing and extend 300 mm beyond each side of the door.

Where possible there should be no level changes at thresholds. Where thresholds are not level with the floor, they should be bevelled and not exceed a height of 13 mm and be sloped to facilitate the easy passage of wheelchairs.

Thresholds accommodating a vertical change in level should not exceed 19 mm.

Door mats or grills should be firmly secured to adjacent floor surfaces, or omitted. Bars or grids should be at right angles to the direcion of travel.

Door hardware

Horizontal lever handles should be used when and where possible since they are easier to manipulate than knobs or push and pull handles.

All manual door openers should be of lever design, or a shape which is easy to operate and grasp. They should be mounted 910 mm to 1 m from the floor surface to the centre of the actuating portion of the device.

Door hardware should be designed with no sharp corners or edges, to reduce the risk of catching clothes, etc.

Clearance between the handle and the door should be at least 50 mm.

Where push plates are an integral part of the door, the push plate should be of a contrasting colour.

Where the opening device is a horizontal bar extending from stile to stile, the portion of the bar to be pulled or pushed should be distinguished by a change of colour and/or texture.

Corridors

Corridors should form logical routes from point of entry to all usable public areas within the building.

The width or corridors should permit easy access by persons in wheelchairs, clear width being 900 mm to 1.5 m; 1.7 m is recommended where two chairs may need to pass one another.

Changes in level should be avoided; where they are unavoidable, ramps should be provided which conform to acceptable criteria.

Tactile cues should be provided at level changes or in hazardous areas.

Objects should not project into the corridor unless mounted higher than 2.25 m. Below this height, objects should be recessed and identified by colour or textural change.

Floor

There should be no changes in level between corridors and adjacent rooms or spaces.

Floor finishes should not be ambiguous in design or colour and should be evenly lit.

Floor surfaces should contrast significantly with adjacent vertical surfaces in colour or tone.

Indoor and outdoor floor surfaces should be slip-resistant under both wet and dry conditions.

Carpets laid on floors, stairs or ramps should be securely attached, and be of dense weave and low loop pile with a minimum of or no underlay (for example, glue-down installation).

Carpet pile should be of non-static fibres.

Stairs

Small unit components (tile or brick, for example) should not be used on stair treads unless the edge of the tread is of a contrasting colour.

Heavily patterned carpets shold not be used on stairs.

Stairs and landings should not conflict with other paths of travel. Door swings over landings should be minimized and should not interrupt clear path of travel.

Elevators

Elevating devices for persons should comply with the Canadian Standards Association Standard, Safety Code for Elevators, Escalators and Moving Walks.

Elevators should be accessible to and serve all major areas and floors of the building.

Directional information to the elevator should be provided.

Elevator entrances on every floor should be provided with appropriate floor designations on the door jamb, suitable for the visually impaired.

All hoistway entrances should be provided with visible and audible signals to indicate an approaching car and direction of travel, and:

the centre line of the visible signal should be a minimum of 1.8 m from the lobby floor;

arrow shapes for directional indication, consistent with the direction of travel, should be used;

each symbol shall be 60 mm high, and shall be visible from the proximity of the lobby call buttons;

the colour white should be used for the "up" symbol, and the colour red should be used for the "down" symbol;

audible signals shall sound one for the "up" elevator, and twice for the "down" elevator;

the use of in-car lanterns are acceptable; they should be visible from the area in front of the call button.

All elevator call buttons in lobbies should be accessible to persons in wheelchairs. The centre line of buttons should be not more than 1 m from the floor surface.

Door openings should permit access by persons in wheelchairs, and satisfy door opening criteria.

Elevator doors should open and close by automatic means, and should be provided with a re-opening device which would re-open a car door and the hoistway door automatically if the door were obstructed by an object or person.

The re-opening device should be automatic and not require contact for operation if the object or person passes through sensing devices located at a height of 125 and 150 mm from the floor.

The elevator operation should be automatic, and each car should be provided with self-levelling features.

Elevator floor space should be large enough to permit persons in wheelchairs to manoeuvre, and to be accompanied by an attendant.

Controls should be usable by both wheelchair users and other persons with disabilities -- sight impairment for example.

On control panels, characters should be to the left of the buttons. All characters should be 15 mm high, with clearly defined edges contrasting in colour with face plates. Minimum size for buttons should be 20 mm, excluding perimeter lighting. Raised buttons are permissible if the recess does not exceed 5 mm. Heat sensitive buttons should not be used.

Consideration should be given the the use of braille on control panels to the right of standard figures.

When two vertical rows of buttons are provided, odd number floors should be located on the left side and even numbers on the right hand side. Where three or more rows of buttons are required, the buttons should be numbered left to right.

A blank button should be provided for Floor 13, where that floor indication does not appear in the building.

Standard symbols should be used to identify controls. The highest floor button should be no higher than 1.4 m from the floor to the centre of the button and the lowest button no lower than 750 mm.

A car position indicator should be provided above the control panel or over the opening in each car to show the location of the elevator by floor. As the car passes or stops at floors, the corresponding number should illuminate and an audible signal sound.

An automatic verbal announcement of floor numbers may replace or accompany the traditional audible signal. This should be no less than 20 decibels.

Signs should be unambiguous, directing the use of the emergency call system. The location should be identified with raised or incised symbols adjacent to the device. Emergency controls should be grouped at the bottom of the control panel and be 890 mm from the floor to the centre of the emergency button.

An emergency two-way communication system should be provided from the elevator to a controlled location in the building, and:

the highest operable part should be a maximum of 1.2 m from the floor and not lower than 750 mm;

the location should be identified with an adjacent raised or incised symbol;

if the system is connected to the building's power supply, it should transfer automatically to a source of emergency power within ten seconds of failure of normal power;

emergency power should provide two-way communication for a minimum of four hours.

A visual cue should be provided to advise persons with hearing disabilities that the emergency call is being received.

Handrails should be provided on all sides of the elevator cab and should satisfy handrail design criteria. These should be positioned 810 to 900 mm from the floor. The rail should be 40 mm from the wall.

General minimum illumination should be 160 lux candles at 900 mm and 50 lux candles at floor level.

Egress

Egress from a building under emergency conditions is possible for disabled persons if the building has been designed to be accessible throughout.

The hardware for doors into fire stairs, exit corridors or exits should have a change in texture provided either by knurling or an abrasive finish to handles.

Exit access corridors should be separated from all other areas of the building by partitions providing a fire resistance of one hour. Doors in such partitions should have a minimum of 20-minute fire protection rating and glazing in doors should be of wired glass installed in steel frames.

All exits and exit routes should be identified by approved and visible exit signs. Audible signals to identify exits may also be desirable for the visually impaired.

The entire egress route including the actual point of exit should be lit 24 hours a day. Emergency power is required to ensure continuous emergency lighting in the event of power failure.

Emergency warning signals and alarms should be located and designed so that they can be easily seen, heard and understood.

Illuminated emergency exit signs should flash as a visual emergency alarm with a frequency not exceeding 5 Hz.

Visual emergency alarm devices should be located so that the signal or reflection can be seen anywhere in the area served by the alarm.

If such systems use a permanently installed electrical power source, they should be installed on the same circuit as the audible emergency alarms.

Visual emergency alarm devices may also be wireless and portable.

Fire alarm pulls or buttons should be within reach of persons in wheelchairs, or the elderly with limited reach, located 1 to 1.2 m from the floor to the centre line of the fire alarm mechanism.

Signs

Signs should be provided to identify the location and degree of accessibility of facilities and services, to provide route information and warn of possible hazards.

The information should be presented in as clear and concise a manner as possible.

Where possible, all signs should be grouped or mounted in constant locations.

Signs should be located in a manner that, first, allows the sign to be recognized and, second, allows the sign surface to be touched by hand.

Sign information should be designed in such a way that it can be understood by all persons, including the visually impaired. Braille strips can be placed alongside other signs; raised or mounted letters may also be used.

Signs along walkways systems or corridors should be placed to one side of the pedestrian route and be recessed or set back a minimum of 450 mm and placed at eye level between 1.2 and 1.6 m.

Sign location should not conflict with door openings or vehicle movement.

Overhead signs should be located high enough to permit safe pedestrian clearance, that is, above 2.25 m above the floor surface.

Dark lettering on a light non-reflective background is recommended for high visibility, black on white, for example.

Telephones

Public telephones should be provided that are accessible to and usable by persons in wheelchairs and the visually and auditory impaired as well as the able bodied.

Telephone enclosures should permit access by those in wheelchairs, with a minimum clearance width of 760 mm.

Pay telephones may be mounted on walls or free standing pylons or in enclosures without doors.

Coin slots should be placed within easy reach of persons in wheelchairs--a maximum height of 1.4 m.

Aids to visually impaired persons should be provided by way of raised numerals or electronic devices.

Telephone controls should be well illuminated. A minimum of 100 lux candles is preferred.

Where possible push button controls should be used.

Telephone books should be placed to allow their use by persons in wheelchairs, and should be well illuminated.

A flat surface should be provided, within reach of persons in wheelchairs, upon which to place the telephone directory.

Adjusted volume control should be provided in at least one telephone in every bank of telephones in most public buildings and facilities, or in areas with a demonstrated need.

Telewriters should be provided in busy locations such as government buildings, active treatment centres, police stations, transportation centres and other areas with a demonstrated need, for those with hearing and speech impairments.

Washrooms

Separate toilet rooms should be provided for disabled persons who require assistance from helpers who are of the opposite sex, and should contain at least one water closet suitable for use by disabled persons.

Where a vestibule with two doors is provided, space between doors should allow easy wheelchair manoeuvrability.

Baffles provided in entries to restrooms serve to block direct view of fixtures, but these should not inhibit wheelchair manoeuvrability.

There should be a minimum clearance between vestibule walls or baffles of 1.2 m.

Handrails mounted between 810 and 910 mm high should be located on these walls or baffles to provide support for semi-ambulant people.

Such handrails should be able to support a pull of 1700 kPa.

Public washrooms should provide a minimum of one wheelchair-accessible water closet. Such a stall should be a minimum of 1.4 m wide and 1.5 m deep with the door opening outward.

A pull mounted near the hinged side of the door would make door closing easier for many disabled persons.

A coat hook with rounded edges should be provided within reach of persons in wheelchairs. It should be mounted 1.5 m above the floor on the side wall and project not more than 25 mm from the wall.

The water closet should be positioned 450 mm from the centre of the fixture to the adjacent side wall with grab bar, and at least 900 mm from the centre line of the water closet to an adjacent wall, on at least one side of the stall, to permit transfer.

Grab bars should be a minimum of 30 mm in diameter and be located no further than 40 mm from the adjacent wall surface.

Grab bars should be provided and conform to suggested design criteria. Bar should be positioned approximately 400 mm from the centre of the water closet.

Seat height should be appropriate to all persons, inlcuding those making transfers, that is, 430 to 460 mm.

Seats with automatic spring action should not be used.

Flushing controls should be accessible and of a type which is operable by persons with limited hand movement or strength.

A back support should be provided if there is no tank.

A urinal lower than usual should be provided in all men's washrooms, accessible to persons in wheelchairs, rim edge at 480 mm from the ground.

Vanity aprons should permit approach and use by persons in wheelchairs and should have a clearance of 660 mm beneath the bottom of the lavatory to a point at least 250 mm in from the front edge.

Waste pipes should be located at the back of fixtures or be insulated if they constitute a burn hazard.

Water temperature controls are desirable. The maximum recommended temperature is 43.3°C. Faucet handles should be of the lever type.

Soap dispensers, towels, sanitary napkin containers, shelving and other projections should be located in such a position that they will not create a hazard, dispensing height being approximately 1 m from the floor.

Mirrors should be mounted at a height which permits their use by persons in wheelchairs, the lower edge of the mirror being preferably 910 mm to 1 m.

Drinking fountains

Drinking fountains should be located near areas of heavy pedestrian activity.

Fountains should be provided with lever style, hand operated controls.

The spout of the drinking fountain should be at the front and direct water flow parallel to the front edge. The nozzle height should be approximately 825 mm from the ground surface.

The maximum volume and trajectory control of the water should be located away from the fountain.

The fountain should allow for the insertion of a cup beneath the flow of water and a cup dispenser should be located close by.

There should be no sharp edges or corners on drinking fountains which could be hazardous to the user.

If located in an alcove, the recess should permit access by those in wheelchairs. A minimum clearance of 750 mm should be provided, with a minimum of 725 mm clearance between the ground and the fountain base.

Fountains should not protrude more than 300 mm into trafficked areas.

Controls, dispensers and receptacles

All controls, dispensers, waste receptacles and so on, should be placed in positions which permit operation and use by persons in wheelchairs and should be usable by persons with limited hand use or strength.

Controls should be tactile for use by the visually impaired.

Special Barriers: Recommended Solutions

Special solutions are required in places of assembly such as auditoriums, arenas, assembly halls, and stadiums, including such allied facilities as lobbies, ticket offices, stage and backstage areas; dressing rooms and showers require further special consideration.

Seating

Seating provided for those persons in wheelchairs should be in direct ratio to the total seating capacity. Where the total number of fitted seats is fifty or less, two spaces adjacent to each other should be provided. Where the total number of seats is more than fifty, two adjacent spaces should be provided and an additional 1 per cent of the total number of seats, dispersed through the price range of seating in diverse locations close to accessible aisle spaces.

Spaces for persons in wheelchairs should be level and the path of travel to them should be accessible.

The route to the nearest fire exit or horizontal exit should be accessible to persons in wheelchairs.

Seating for persons with orthotic or prosthetic devices should generally be located at the aisles or at the rear. The total number of such seats should be:

For every 50 or less: 2 seats adjacent to each other
50-500: 2 pairs of seats adjacent to each other
Over 400: not less that 1 per cent of total seating

Seating with induction loops, FM, or other listening devices, should be available to persons with auditory impairments. These seats should be other than those provided for the physically disabled. The number of fixed seats should be:

For every 50: 2 seats
50-400: 4 seats
Over 400: not less than 1 per cent of total seating

Seating should be placed to provide sight lines equal to those provided for the majority of the audience.

Service counters

Where standing-height service counters are provided that exceed 915 mm a lower section should be provided for persons in wheelchairs. This lower counter should be, at most, 915 mm in height.

If required for writing, a minimum clear space of 760 mm from the floor, 810 mm wide and 600 mm deep should be provided.

Cafeteria lines and circulation areas should permit use by persons in wheelchairs. Clear width of circulation space adjacent to counters should be a minimum of 810 mm.

Shopping centres and grocery stores

Shopping centres and grocery stores should provide at least one checkout point accessible to persons in wheelchairs.

Where there are controlled checkout lanes, turnstiles, and so on, at least one other route should be readily available to disabled users.

Devices used by stores to prevent theft of shopping carts should not inhibit egree or access to wheelchair users, unless an alternative and equally convenient route is available.

Shopping aisles should permit access by those in wheelchairs with a clear width of 810 mm. Commonly used aisle displays should be a maximum of 1.2 m from the floor.

Education facilities, libraries and museums

Education facilities, libraries and museums should be accessible to and usable by disabled persons.

In each work or study area with fixed work tops, at least one station should be accessible to persons in wheelchairs.

A clear space of 710 mm below the work top, extending to the floor, should be provided and a clear space beneath of 915 mm wide and 600 mm deep.

Clear aisle width between work tops should be 915 mm.

Aisles between fixed stacks in libraries or display areas should permit wheelchair access, 1 m beng preferred.

In museums and galleries, every level open to the public should be accessible to wheelchair users.

Information sources should be located close to main entrances.

Information provided should be easily comprehended by all persons, including the visual and auditory impaired.

Displays should be designed to be seen by seated and standing persons.

Some displays should be designed to be touched an understood by the visually impaired.

Two per cent of the total number of lockers, or at least two lockers in every locker room, should be positioned within 230 mm and 1.2 m of the floor with a minimum clearance in front of 1 m.

Lockers close to accessible routes of travel should be provided for disabled persons.

Recreation facilities

Changing and shower rooms should be accessible and usable by disabled persons.

The inside dimensions of shower rooms should be a minimum of 915 x 915 mm; a well-padded seat should be positioned 480 mm above the floor, hinged to fold up against the wall. Grab bars should be installed on two adjacent walls, one of which is opposite the shower head.

The soap tray should be a maximum of 1 m above the floor. In large stalls, two soap trays may be desirable, one below the shower head and one on the adjacent side wall within easy reach of the seat.

The shower stall should have a non-slip floor surface, and should be well drained away from the seat.

Controls should be of a single lever design.

A flexible telephone-type hand-held shower spray should be permanently installed with a hook located 1 to 1.2 m above the floor surface. The hose should be 1.4 m in length.

A diversionary valve should be installed to change the water flow from the hand held shower to the fixed head shower. The temperature of hot water delivered to the shower should not exceed 43.3°C.

Where gang showers are provided, an individual wheelchair shower is not required unless there is a curb preventing wheelchair access.

Sports areas

Sports areas, playing fields, for example, should be located close to main buildings, parking areas, and changing areas and washrooms.

Accessible seating accommodation should be provided close to sports areas. Such seating should be constructed to support 115 kg and be provided with back and arm rests.

Camping

Picnic tables should be designed to permit their use by persons in wheelchairs. A clear space of 710 mm from the ground to the underside of the table and a top clearance 600 mm deep and 750 mm wide is recommended.

Camping and picnic areas should be located close to accessible parking areas and walkways. Two parking spaces or 10 per cent of all campsite parking (whichever is the greater) should be provided; each space should be 3.7 m wide. Parking and walkway surfaces should conform to established standards.

Outdoor trails should be accessible to and usable by all disabled persons and conform to requirements for walkways.

Swimming pools

Accessibility to swimming pools designed to accommodate a diversity of users can be provided in two ways:

at various locations, the pool coping can be raised above the pool deck 480 mm and fitted with grab bars that allow people who have difficulty crouching, or who are wheelchair dependent, to first sit and then swing their legs over the side into the water;

the pool coping should be level with the water, with enough slope to drain water back into the pool or into a continuous protected trough.

In addition to the above, there should be an entry ramp and a set of stairs with handrails, both located at the shallow end of the pool.

Pools with a high proportion of shallow area are preferred by many people who enjoy the security of knowing they can touch bottom at any time. If diving is a requirement, then an additional pool should be considered.

Lake swimming

The major disadvantages of lake swimming for disabled persons is the lack of control over water depth, water temperature, and sanitation standards. In addition, the water may not be clear and there may be a lack of supervision.

The grade of the beach into the water should be no more than 10 per cent.

An access walk leading to and along the water's edge is desirable where the approach is over soft soil or sand.

A ramp with a handrail along one side extending into the water to a depth of 900 mm should be provided.

The entire swimming area should be well marked with floating markers or signals.

Swimming areas should be supervised by trained staff.

Administrative and Legislative Barriers: Recommended Solutions (see figure 4)

Improved legislation and uniform design criteria help ensure that disabled persons are able to have access to and use those buildings which are open to the general public, or which constitute the work place.

Design criteria appropriate to all persons should be developed by a group consisting of:

- representatives from national consumer organizations
- representatives from all three levels of governement
- representatives from Canadian and provincial human rights commissions
- representatives from the Canadian Labour Congress
- occupational therapists and rehabilitation engineers
- urban planners and landscape designers
- architects, interior designers and industrial designers.

This body described above should recommend that their findings be incorporated into national and provincial building codes.

The National Building Code of Canada and provincial codes should be expanded to cover a wider range of major and minor building classifications.

Legislative provisions for the retrofit of older buildings, with accompanying government and private financial incentives, should be developed.

Legal mechanisms for enforcement of accessibility provisions should be developed at the local level, following their adoption by the respective national and provincial bodies.

Service Barriers: Recommended Solutions

Improved knowledge of accessibility issues by service providers and the general public can ensure wide access to services and opportunities and wider use of them by disabled people.

Employers, trade union educators, health and social service providers and the design professions should have access to educational seminars and workshops on accessibility issues and solutions.

Grants and other financial incentives should be made available to non-government entities and employers wishing to adapt their facilities for use by disabled persons.

Applied Solutions

Physical Barriers: Applied Solutions

A Checklist for Building Use by the Handicapped was prepared by the National Research Council in Ottawa in 1972. This checklist provides a guide for determining and ensuring that buildings are accessible to and usable by disabled persons.

The ADAPT Checklist prepared by A.W. Cluff and P.J. Cluff was a refinement of the NRC Checklist and was developed for the City of Toronto Planning Department for the evaluation of major public and municipal buildings in Metropolitan Toronto, prior to the Handicapped Olympiad held in Toronto in July 1976. This checklist was intended to be used to establish primary accessibility for the mobility impaired in public facilities.

The revised ANSI Standards (the American National Standard Specifications For Making Buildings and Facilities Accessible To and Usable by Physically Handicapped People) were developed by the American Nationl Standards Institute, New York, in 1980. Although these standards are American, they provide an excellent source of performance specifications to ensure accessibility and usability of facilities and services by disabled persons.

Canada Mortgage and Housing Corporation's checklist for office buildings was developed in 1981, as a consequence of CMHC's participation in an affirmative action program for the employment of women, native people and the disabled. The checklist assessed the retrofitting required to achieve barrier-free design in office buildings owned and/or leased by CMHC. In addition, the checklist addresses accessibility to the office building from the community and on the building site.

Public Works Canada nas an on-going retrofit program based on a revised version of the NRC's Checklist for Building Use by the Handicapped. Its author, Don Henning, is currently employed by Public Works Canada in overseeing the retrofit program of all federally owned buildings and facilities. (This program should be finished in 1983.)

Affirmative Disabled Action Program, Toronto: ADAPT II, was revised and updated by Cluff and Cluff Architects in 1982 to reflect a broader range of the problems that face the disabled in a variety of buildings and facilities. This revised version provides employers with an initial tool by which their own buildings and work settings can be assessed for their accessibility to potential disabled employees.

Environment Canada has a continuing program to retrofit federally owned buildings which house or promote leisure activities, among them, buildings owned by Parks Canada, National Museums of Canada, the National Government Office of Tourism and the National Capital Commission. The Department of Public Works' standards for retrofit are used whenever possible.

The Saskatchewan Human Rights Commission, in collaboration with the Provincial Accessibility Committee of Saskatchewan, recently developed one of the most comprehensive accessibility guidelines to date. The guidelines have provisions for enforcement and encompass a wider range of publicly used buildings than usual. They also provide standards for adjacent buildings, standards for a wider variety of amenities and solutiions for all types of disabilities.

Variety Village, in Toronto, is a huge sports complex initially designed for disabled persons, but available for use by non-disabled persons. It was designed to accommodate a wide range of physically disabled persons and, in addition to providing a barrier free site and totally accessible facilities, has incorporated several custom designed specialy features, including:

a bar which circles the track as an aid to blind runners;

a track constructed of a special material designed to cushion impact for the runner with an artificial leg, while strong enough to withstand racing wheelchairs;

special acoustic muffling added to ceilings to minimize echoes which might reverberate in the hearing aid of deaf athletes;

numerous electrical outlets in the wall of the field house for recharging the batteries of battery-operated wheelchairs;

two outside lifts used to assist in the transfer of wheelchairs to and from buses.

In Alberta, Edmonton's Rundle Park Recreation Centre, the Veiner Centre in Medicine Hat, and the Kananaskies Provincial Park lodge facilities were all designed specifically for use by disabled persons.

Administrative and Legislative Barriers: Applied Solutions

The British Columbia Human Rights Code states that all places of employment be accessible to disabled persons.

The Province of Newfoundland has the only Accessibility Compliance Board in Canada.

In Quebec, Bill 9, "An Act to secure the handicapped in the exercise of their rights" (1978), requires that owners of public buildings not covered by the National Building Code of Canada, submit a development program designed to ensure accessibility to disabled persons within a period of five years.

The Quebec Building Code of 1976 contains parts 3.1.1.2 "Special measures for access to buildings of persons in wheelchairs;" 3.6.2.3 "concerning width of doors and the identification of exits and washrooms for persons in wheelchairs using International Symbols of Access." Public buildings are in conformance with those identified within the National Building Code of Canada.

The Saskatchewan Human Rights Code states that all buildings open to the public must be accessible. The Commission has adopted the "Accessibility Standard" as formal interpretative guidelines on what constitutes accessibility.

The Ontario Building Code contains a separate Part 5, detailing building requirements, which closely parallels Supplement No. 5 to the National Building Code of Canada. The code requires "that places of assembly, government office, retail, commercial and residential buildings be accessible (with some qualifications) to wheelchair disabled persons."

Part 10 of British Columbia's Building Code is now law in all parts of that province. Provisions for accessibility have been modelled after Supplement No. 5 of the National Building Code of Canada, information and guidelines, however, expand upon these.

Service Barriers: Applied Solutions

The federal government recently initiated a two-year study, commissioned by the Department of Employment and Immigration, on the lack of employment opportunities for physically disabled persons in civil service jobs. A program was developed for the purpose of creating employment opportunities by:

establishing a fund to purchase equipment and vocational aids for use by disabled employees;

the examination and review of policies and selection procedures which could prove discriminatory;

directing the Department of Public Works to undertake a study for the purpose of determining how all government buildings could be made accessible by 1983.

The Social Planning Department of Halifax recently issued a brochure listing restaurants and beverage rooms used at present by disabled persons. The brochure, Halifax Restaurants and Beverage Rooms: A Guide for the Handicapped, identifies the location of parking, states whether washrooms are accessible and where they are located within the building, and lists barriers to access (level changes), should they exist. The brochure also comments on interior design, and the placement and type of furnishings.

The Junior Leagues of Toronto and Montreal have issued similar documents with a number of classifications of buildings described. The National Capital Commission in Ottawa has also published guides for the disabled.

The National Capital Commission in Ottawa provides nature trails for the visually impaired and wheelchair disabled.

The Wintario Corporation provides funding for the purpose of promoting accessible recreational and educational facilities in Ontario. This money can be applied to the capital, construction, renovation, or operational costs incurred to provide new or improved services.

Comments

The National Building Code of Canada currently defines public buildings as meaning "buildings to which the public is admitted but not including apartment buildings, houses, boarding homes or buildings of "Group F" major occupancy. "Group F" includes factories, warehouses, television stations and salesrooms.

The types of "public buildings" required to be accessible varies considerably by province. In many instances the definition provided by the National Building Code has been officially adopted, while other provinces have included additional types of building classifications.

Regardless of the type of public building required to be made accessible by the provincial codes, however, accessibility standards generally apply only to new construction (with the exception of federally owned public buildings). Since 95 per cent of all public buildings identified within the codes are exempt because they were built before the requirements were in effect, the value of such standards is questionable.

While advocating the renovation and retrofit of all "publicly used" buildings in a manner which is appropriate to all disability groupings, we recognize the enormous cost that the imposition of such standards would impose, especially upon small private enterprises. Furthermore, the economic and legislative problem of making all public buildings accessible is exacerbated by the fact that these buildings fall within varying jurisdictions.

In Quebec, Bill 9 has attempted an answer to this problem by encouraging the renovation and retrofit of older buildings and those not covered in the provincial building code through human rights legislation.

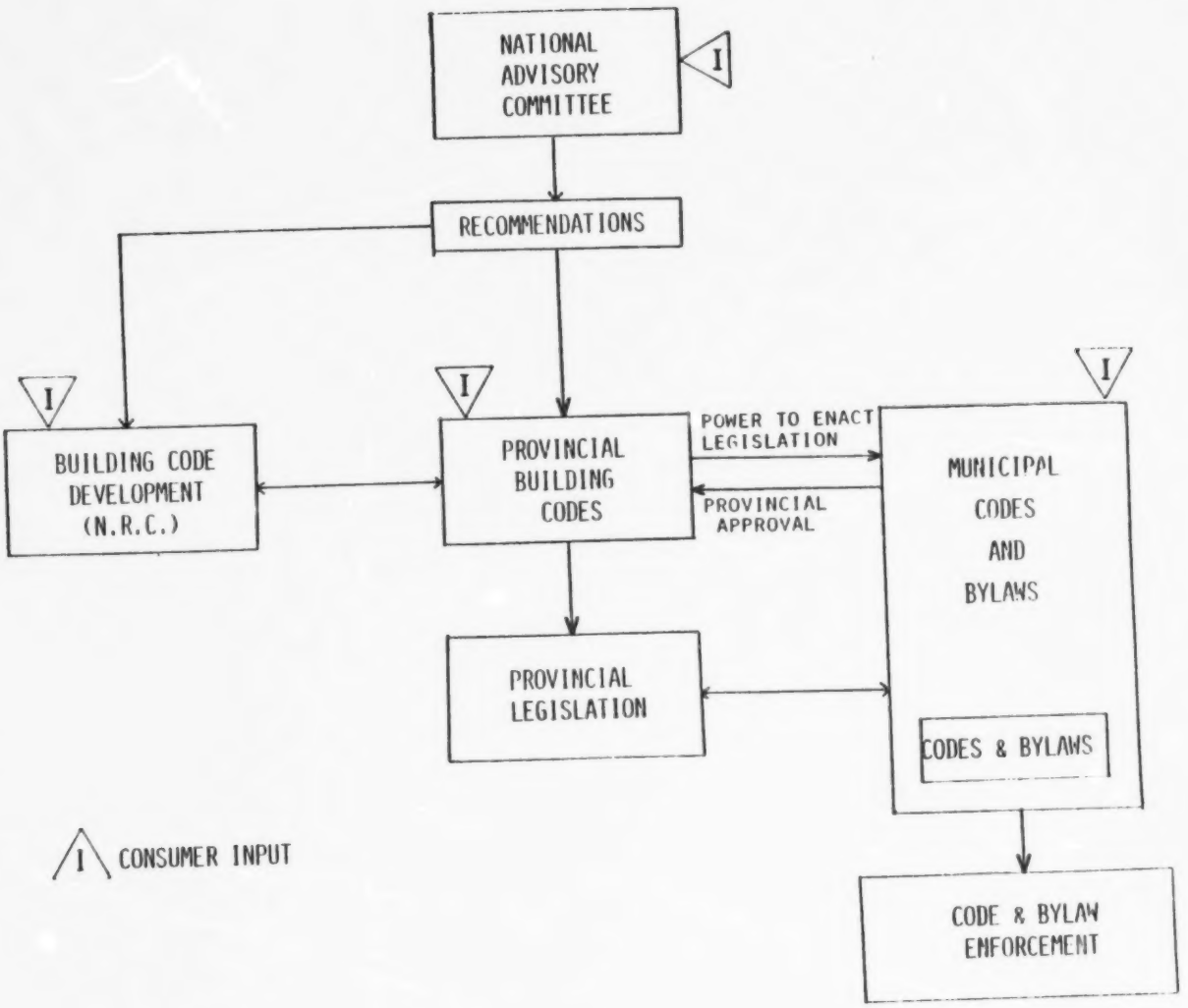
It does appear that the degree to which disabled persons are afforded protection under the provincial human rights codes has a discrete bearing upon the degree to which access has been defined within the respective building codes.

However, the increasing awareness and militancy of disabled consumers require that legislative provisions for retrofit, through government or other financial incentives, must be seriously considered. With the advent of provincial human rights codes, which are more protective of the rights of disabled persons, the consumer now has access to the natural justice system.

Disabled persons, under the natural justice system, are able to initiate class action suits against the owner(s) of any building or facility which is physically inaccessible to them, thereby denying them the same rights and opportunities (employment, for example) as all other people.

Such suits are not, however, always successful. The United States Architectural and Transportation Barriers Compliance Board, formed in 1974 in response to class action suits initiated by disabled consumers, has never been able to monitor non-compliance of the ANSI Standards effectively because of the lack of adequate enforcement mechanisms and manpower at the local level.

We expect that the Newfoundland Compliance Board will encounter similar difficulties, unless such problems have been foreseen and accommodated within the provincial and municipal legislation.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RECOMMENDATIONS
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PROVINCIAL BUILDING CODES
POWER TO ENACT LEGISLATION
PROVINCIAL APPROVAL
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MUNICIPAL CODES AND BYLAWS
PROVINCIAL LEGISLATION
CODES & BYLAWS
CODE & BYLAW ENFORCEMENT
I CONSUMER INPUT

Figure 4

7. SERVICE DELIVERY

ISSUE STATEMENT: DISABLED PERSONS SHOULD BE ABLE TO HAVE ACCESS TO AND USE ALL COMMUNITY SERVICES

Problems

Physical Barriers

Physical barriers to access to and use of community services are associated with the absence of, or inconsistent design and/or placement, or lack of necessary interaction of:

- the exterior physical environment
- public transportation and facilities
- private transportation and parking facilities
- public buildings and facilities
- furnishings and equipment
- prosthetic/orthotic aids.

Administrative and Legislative Barriers

Administrative and legislative barriers to access to community services include a lack of coordinated and uniform agreement by all levels of government and the private sector on:

the degree to which services and opportunities should be accessible and usable by disabled persons;

policy formation relating to uniform design criteria, and the degree to which accessibility has been provided within the provincial/municipal building codes and bylaws;

implementation priorities and programs for barrier solutions;

the economic feasibility of making required adaptations;

the jurisdictional responsibility for provision and funding of services and adaptations;

the type and degree of funding for the provision and operation of necessary services;

government assistance and benefits available to disabled persons.

Service Barriers

Disabled persons are frequently unable to use necessary or desired services in their community effectively because of:

a lack of understanding of accessibility issues by service providers, all levels of government, the private sector and the general public;

attitudinal barriers generated by service providers, disabled consumers and advocacy groups;

poorly paid, trained and informed service and support staff;

gaps in the provision and delivery of services;

high or inconsistent and discretionary costs of services to disabled individuals;

lack of inter-provincial mechanisms ensuring transferability of services, costs and benefits;

inaccessible, inappropriate and poorly located services;

lack of inter-government and private sector interaction and communication;

sporadic and inconsistent funding of services;

programs designed to use up available funding sources rather than meet recipients' needs;

programs which are no longer appropriate to the users.

Recommended Solutions

Physical Barriers: Recommended Solutions

The exterior physical environment should be accessible to and usable by disabled persons. (See Section 3, under Physical Barriers: Solutions.) In addition, all pedestrian routes should:

provide logical paths from origin to destination, integrated and appropriate to, the general public;

offer facilities and amenities for lingering, browsing or meeting people;

physically demonstrate accepted public policy through appropriate and creative solutions;

offer the most diversity possible in terms of activity and pedestrian amenity;

be accessible to the physically disabled and visually impaired, as well as non-disabled persons.

All public transportation systems and facilities should be designed to accommodate a large number of disabled persons. (See Section 4, under Physical Barriers: Solutions.) In addition, all systems should provide the necessary interaction between the home and necessary or desired services.

Private transportation and parking facilities should be designed to be accessible to, and usable by, disabled persons (see Section 5, under Physical Barriers: Solutions), and provide a viable alternative to urban and rural public transportation systems.

All public buildings in the community should be easily accessible by way of pedestrian travelways and public and private transportation systems. In addition, all buildings should be designed to promote full and effective use by disabled persons of:

- employment opportunities
- health and social services
- educational and vocational training
- wholesale and retail shopping
- leisure and recreational activities
- social and cultural functions. (See Section 6, under Physical Barriers: Solutions)

Site fixtures and interior furnishings should be usable by disabled persons.

Research into and improvement of prosthetic and orthotic aids should be on-going for all aspects of life.

Administrative and Legislative Barriers: Recommended Solutions (see figures 5-9)

Disabled consumers can influence policy formation at all levels of government and the private sector through their active participation in the urban and social planning process, consumer advocacy and the promotion of improved public awareness of accessibility issues.

Disabled persons should influence the development of appropriate and uniform design criteria for:

- the exterior physical environment*
- public transportation**
- private transportation and parking***
- public buildings and facilities.****

Disabled persons should influence the degree to which their communities are accessible by advocating improved provincial/ municipal code development and enforcement mechanisms.

Disabled persons should ensure that social planning is an adjunct to any and all urban/rural planning processes.

Through improved provincial human rights codes and access to the natural justice system, disabled persons should be able to influence the formation and implementation of decisions and priorities.

Comprehensive home care support services should be developed on a local and regional level and should be designed to accommodate all disability types.

Care in the home should be seen as an integral component of social housing policy, and not isolated within the jurisdictional confines of health and social services.

The federal government should have a strong and active involvement in developing support programs by providing financial assistance and ensuring that uniform inter-provincial/municipal standards of operation and care are developed and implemented.

Funding for home-support programs should be on-going and be seen as a logical extension of the care delivery network.

Standard user-fees for home care services should be developed to prevent over-billing practices.

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* See Section 3, under Administrative and Legislative Barriers: Recommended Solutions.

** See Section 4, under Administrative and Legislative Barriers: Recommended Solutions.

*** See Section 5, under Administrative and Legislative Barriers: Recommended Solutions.

**** See Section 6, under Administrative and Legislative Barriers: Recommended Solutions.

Means-testing of recipients for services should be used as little as possible and be related to cost-of-living escalations.

The cost for prosthetic/orthotic aids should be accommodated in provincial health service plans.

The current federal/provincial health care classifications should be reassessed to promote a more appropriate delivery of care and services to persons living in the community.

A comprehensive and uniform health care continuum should be developed which includes:

- therapeutic services
- orthotic/prosthetic aids
- rehabilitation services
- diagnostic assessment and referral services
- optometric and pharmaceutical services
- nursing services
- medical, dental and hospital insurance coverage
- financial assistance with extraordinary medical costs
- transportation to medical appointment
- family relief services
- home care and support programs
- home modification programs.*

All health care and residential care alternatives should be accessible to and usable by disabled persons living in both urban and rural settings.

All buildings and facilities housing health and social services should be integrated into the framework of community planning, and be easily accessed and used by disabled persons.

Comprehensive information on the availability and location of such services should be on-going and available to all sources of referral (general practitioners, for example) and disabled persons.

Eligibility criteria for health and home support services should be standardized inter-provincially and should be transferable.

Medical criteria which largely determine the type and degree of health care and/or income support should be standardized and presented in a more comprehensible manner to reduce the potential for abuse or discretionary interpretation by both doctor and recipient.

* Specific housing changes are dealt with in other CMHC research studies and publications.

Uniform legislation should be developed which takes into account the following extraordinary costs relative to the disabled person's employment opportunities:

transportation to and from work is a major expense;

medical expenses may become a personal expense, for example catheters are not covered by insurance;

the initial cost of items such as wheelchairs or seeing eye dogs are not covered once the individual is employed;

wheelchair repairs and supplies are an additional burden;

attendant care costs must be considered;

homemaker costs must be considered.

Research into vocational and support aids should be on-going.

The adaptation of work spaces, and/or the acquisition of employment aids (special typewriters and vocational training aids, for example) should be subsidized through federal/provincial legislation.

Consideration should be given in some circumstances to providing grants or subsidies to employers hiring disabled persons.

The private sector, as well as federal/provincial/municipal governments, should be encouraged to initiate affirmative action programs in all places of employment.

Uniform federal/provincial legislation should be developed which ensures a more appropriate disposable income and supplementary benefits to disabled persons. Such legislation should take into consideration the current rate of inflation.

Service Barriers: Recommended Solutions

Improved knowledge of accessibility issues and use of the knowledge that comes from research into the problems of the disabled will ensure improved access to and use of services in the community.

Appropriate health and personal services should be provided to disabled persons living in the community on a systematic and on-going basis.

Service and care providers should be recognized as necessary and skilled service providers to disabled persons and should be:

paid a wage which recognizes that their services are essential and a necessary complement to traditional health care services;

trained to recognize, understand and deal with the complexities of disabilities which limit daily living activities;

trained to respond to the individual needs of disabled recipients of service;

trained to respond to the disabled recipient's individual time schedule.

The formation of provincial/municipal inter-agency support and information networks comprised of government and private sector service providers would help identify major gaps in services and delivery at the local level and reduce or eliminate fragmentation and redundancies of services.

All services, necessary to the well-being and continued residence in the community of disabled persons should be standardized in terms of cost, eligibility and transferability.

Funding of support services should be standardized and uniformly applied on an on-going basis.

Communication, vocational and educational aids should be made available to disabled persons as required.

Income benefit programs should provide an adequate disposable income to disabled persons to allow them to live as independently and normally as possible.

All necessary health, social, employment, educational, recreational and transportation services should be appropriately located within the framework of accessible communities planning.

Applied Solutions

Physical Barriers: Applied Solutions

See Sections 3, 4, 5, 6, under Physical Barriers: Applied Solutions.

Administrative and Legislative Barriers: Applied Solutions

The Department of National Health and Welfare administers the Extended Health Care Services (EHCS) program, which allows the federal government to make block funding contributions to the

provinces and territories to provide them with greater flexibility in the identification, implementation and development of health services which are complementary to the services covered by the Hospital Insurance Program and the Medical Care Program. The services which are included in the EHCS Program are nursing home intermediate care, adult residential care, converted mental hospitals, home care (health aspects) and ambulatory services.

In 1973, the U.S. Rehabilitation Act provided for non-discrimination by federal contractors. It requires that all federal contracts over $2,500 must include an affirmative action clause, in which the employer agrees not to discriminate against a disabled worker. As of January 1976, employers are required to submit a certificate showing an effective program before a contract is awarded.

In Canada, the Canadian Employment and Immigration Commission (CEIC) provides consultants who will help organize affirmative action programs. The consultants have been trained to look at the individual nature of companies and adapt the affirmative action method to specific needs. The CEIC has the mandate to implement the affirmative action strategy and the Federal Contracts Program. The Federal Contracts Program, in turn, encourages Crown corporations and businesses benefiting from federal contracts to adopt affirmative action.

Under agreements concluded with all provinces and territories, except Quebec, the federal government contributes 50 per cent of the costs incurred by the provinces in providing a comprehensive program for the vocational rehabilitation of physically and mentally disabled persons. While Quebec is not a participant in this program, a significant part of the province's cost of providing rehabilitative services to the disabled is shared under the Canada Assistance Plan.

In 1978, the federal Ministry of Labour established a program designed to enlarge employment opportunities in the private sector for physically disabled persons. The program emphasized consultation with public and private agencies, as well as the development of pilot projects and educational initiatives.

The Canadian Employment and Immigration Commission has a number of programs which contribute to improving job prospects for the disabled. These programs include Outreach, Work Adjustment Training, Canada Works projects, Canada Manpower Industrial Training Programs and the Local Employment Assistance Program.

The Canadian Labour Congress is Canada's major national trade union centre, representing more than 100 affiliated national and international unions with a total membership of 2.3 million. Its social and community program department is currently working out ways to open the doors of industry to disabled persons.

The Department of Veterans Affairs operates non-profit sheltered workshops in Toronto and Montreal. These have close ties with the Canadian Corps of Commissionaires, responsible for the job placement of many disabled people.

In response to public pressure, the Canadian Employment and Immigration Commission initiated an experimental program of wage subsidies designed to encourage the private sector to employ persons with mental and physical handicaps.

The report Obstacles contains the findings of the Special Parliamentary Committee on the Disabled and the Handicapped, which was chaired by David Smith. The report was tabled in the House of Commons on 16 February 1981. Its 130 recommendations cover the whole range of issues relating to the disabled and their struggle for equality: human and civil rights, employment, housing, access to public buildings and facilities, transportation, education, institutional living, sports, recreation and leisure, changing attitudes, research and development, data base development, aids and devices, and Canada's native population.

Service Barriers: Applied Solutions

Lethbridge Rehabilitation Centre, Montreal, began providing physiotherapy services at home in 1958 and is now the only rehabilitation centre in Quebec which offers a comprehensive multi-disciplinary rehabilitation service at home for physically disabled individuals. The objective of this service is to assist physically limited individuals to improve and maintain their functional levels within their own homes, and to prepare them for further rehabilitation, where possible, outside their homes.

In Manitoba, the Continuing Care (Home Care) Program was established on 1 September 1974, operating under the auspices of the departments of health and community services with the mandate to:

> coordinate existing home care programs (both government and private agencies) into one integrated, community-based, province-wide, multi-entry home-care system;
>
> develop the resources necessary to provide a full range of services to meet the minimum needs of those in need of service related to health functioning and;
>
> integrate the most appropriate utilization of both care programs.

The program is intended to serve all residents of Manitoba, regardless of age, who might otherwise require hospitalization or placement in an institution. Requests for home care may come from any source in the community.

Outside Winnipeg, the Manitoba home care program is delivered through the many local offices of the Department of Health and Community Services and through district health centres. In Winnipeg, those individuals requiring short-term care (under 60 days) receive services from the Victorian Order of Nurses; those requiring services of longer duration receive services from their nearest Department of Health and Community Services office.

The Community Occupational Therapy Association (COTA), based in Toronto but serving some outlying regions, is a non-profit health care agency which offers a variety of occupational therapy services to people in their own homes and communities. Established in 1978, it is committed to providing assessment and guidance in activities of daily living, and to assist disabled persons to function effectively at home, work or school.

Adaptive equipment is seen by COTA as being of great assistance in the promotion of independent living and it provides disabled persons with the appropriate training, care and guidance ncessary to operate such devices. A very personalized service is provided, in which not only the individual but the home environment are assessed to determine how the environment can be made more appropriate to the needs of the individual.

The Fokus I and II projects were developed to provide a more permanent housing solution with care support services for disabled persons. The projects were developed through the collaboration of the Manitoba Housing and Renewal Corporation, Ten Ten Sinclair and the Home Care program.

Fokus I, located in a MHRC low-rise in Winnipeg, opened its doors to nine disabled persons in February of 1978.

Fokus II is the first government sponsored modified apartment for the disabled users located in a private development in Canada. The project, located at 15 Kennedy Street, Winnipeg, opened in the fall of 1980. The MHRC financed the modification of 15 suites, the MHRC and CMHC subsidized disabled tenants' rents, and the Home Care program coordinated the care component.

Fokus staff work in shifts, on a twenty-four-hour-a-day, seven-days-a-week basis to provide tenants with assistance in dressing,

washing and cleaning. Disabled tenants can also page a staff member if help is required outside of their individual schedule of personal care. The Fokus tenants must adhere to a strict schedule so that staff members have time to assist all with their personal care needs.*

The Ministry of Health in British Columbia, responding to complaints that service deliverers are not adequately trained or sensitized to the needs of disabled people, established both a Provincial homemaker Training Program and a Long-Term Care Aide Training Program, as part of its Long-Term Care Program.

The purpose of the homemaker program is not only to develop basic homemaker skills, but also to assist those taking the homemaker training to perceive the importance of their role. Through a combination of performing and demonstrating practical home management and personal assistance skills, they assist disabled people to maintain their independence within their own homes.

The National Research Council has been active in bioengineering research and development for twenty-five years, and was a pioneer in work on aids for the blind. The establishment of a Rehabilitation Technology Unit in Toronto now makes available highly sophisticated technical aids to disabled persons. The Medical Engineering Section of the NRC sponsored a "Workshop in Communication Aids for the Non-Verbal Physically Handicapped" in 1977, and the published proceedings are available. Currently, the Medical Engineering Section is supervising a contract with Norpack of Pakenham, Ontario, for the development of a Blissymbol terminal, using a home television as a display device. The Comhandi was also designed by NRC; this enables severely disabled persons to communicate through the use of a joystick, scanning grid and typewriter.

Of great interest and value is a complete inventory published by NRC of bioengineering research currently taking place in Canada. This inventory is brought up to date annually and contains information on all technical aids and devices for the disabled, including the communications disabled.**

Bell Canada and Northern Telecom provide services for special needs and special equipment which can be used by persons with learning and sight losses, chronic ear defects, speech defects and motor impairment or weakness. Bell Canada has completed the compilation of a Directory of Telecommunications Aids for Disabled Persons.

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* Reported in the Winnipeg Free Press, 18 August 1981.

** Health and Welfare Canada, Disabled Persons in Canada, Ottawa, 1981 (Revised Edition).

The most commonly used devices are the Telecommunications Device for the Deaf (TTD), and what is known as the TTY systems. The TTD enables hearing impaired persons to make telephone calls using regular telephone lines. The TTY is a TTD system that uses a coupler that converts electric signals from a teletypewriter into acoustic speech. An outmoded Teletype machine is converted to type at a slower speed and is then linked to an acoustic coupler which translates electrical signals emitted by the teletype machine into acoustic beeps which are carried by the telephone wires. The coupler at the receiving end translates the acoustic signals back into electrical signals, which, in turn, activate the teletypewriter.

An increasing number of TTDs are being installed to take emergency calls in policy stations, crisis centres, and hospitals. Many community centres also have a TTY/TTD answering service. The Canadian Hearing Society TTY/TTD answering service, with the help of volunteers, relays messages and requests. A national directory of TTY/TTD users is maintained and brought up to date yearly by the Canadian Hearing Society.

The federal Department of Communications has co-funded research and development on the "Visual Ear," a device which enables the speech and hearing impaired to use the telephone. It has also been active in policy development in radio reading services for the blind and for the handicapped, and has sponsored research at St. Paul University, Ottawa. In the future, it will remain active in social policy formulation to promote access by the handicapped to the same information and entertainment as the non-handicapped.

The Blissymbolics Communication Foundation in Toronto, in conjunction with the Ontario Crippled Children's Centre, is currently active in research and development of the communications needs of non-vocal, severely physically disabled children.*

Many hearing aid users function well in one-to-one or small group situations but have difficulty in large groups, at a distance, or in a noisy environment. The Canadian Hearing Society advocates the use of a personal FM system which can help many hearing aid users function well in these situations by extending the hearing aid's auditory "pick-up" range and reducing auditory distortion.

The persons one wishes to hear wears a transmitter suspended around the neck. If preferred, the transmitter can be clipped to a pocket or belt with a small lapel microphone attached to it. The hearing aid user wears a loop around the neck attached to a receiver which can be clipped to a belt or placed in a purse or pocket. The voice of the speaker is brought to the hearing aid as if the speaker were only a few inches away.

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* Health and Welfare Canada, Disabled Persons in Canada, Ottawa, 1981 (Revised edition).

A personal FM system will make it possible to communicate with foremen or supervisors, even while using ear protectors. The following are only a few of the situations in which the personal FM system can be of assistance:

- travelling in the car
- room to room communication
- watching television
- inside to outside communication in the home
- monitoring a baby crying.*

Telidon is a recent invention that is expected to become as popular and as commonly used by disabled people as the television set. Consisting of a little black box which sits on top of a television set, Telidon will have a variety of uses and functions. By means of access to a large centralized computer, the user will be able to receive up-to-date information on a variety of subjects from the telephone directory to catalogue shopping or legal aid.

As with any computer bank, the information available is dependent upon input. At the present time, limited input has imposed restrictions upon the type and quality of information available. However, in the future catalogue shopping from department and grocery stores may be possible. Items will be shown on the screen and the viewer will be able to order them by punching in his/her credit card number. Student study patterns may also change. Micro-computers will not only reproduce the text of any item appearing on television, but will also transfer images that appear on the screen into a computer print-out. Information banks around city centres will connect to Telidon, making more and more information available.

Comments

It is important to recognize that a variety of elements affect the problems of access, service delivery and independent living for disabled people. Not the least of these is the present system of income support. Regardless of how physically accessible the interior and exterior environments are, without an adequate disposable income, disabled persons will continue to be restricted in their lifestyles.

For example:

disabled persons are frequently denied the opportunity of seeking and acquiring employment, since this generally involves an initial expenditure, in terms of transportation and grooming costs;

disabled people may incur extraordinary work-related expenses, concurrent with loss of benefits and other support programs;

* Canadian Hearing Society

disabled persons are frequently denied the opportunity to locate in the residential communities of their choosing, because of their inability to pay current market rents and the restrictions related to rental subsidies, which may comprise part of their income benefit package;

the type of transportation system the disabled uses is often determined by income, as is the frequency and purpose of trips;

since income support benefits do not support leisure time activities, disabled persons are severely restricted as to the type of facility, program or service they are able to afford.

Attitudinal barriers, on the part of both disabled and non-disabled persons, have been a major problem. To a large extenet, however, these have been compounded by a physical environment which has determined what is normal and what is not. Buildings and sites have traditionally been designed to accommodate the able-bodied. Therefore, in order to promote an effective service delivery and best use of their communities, several barrier-conscious disciplines must interact, such as housing, transportation, education and social services.

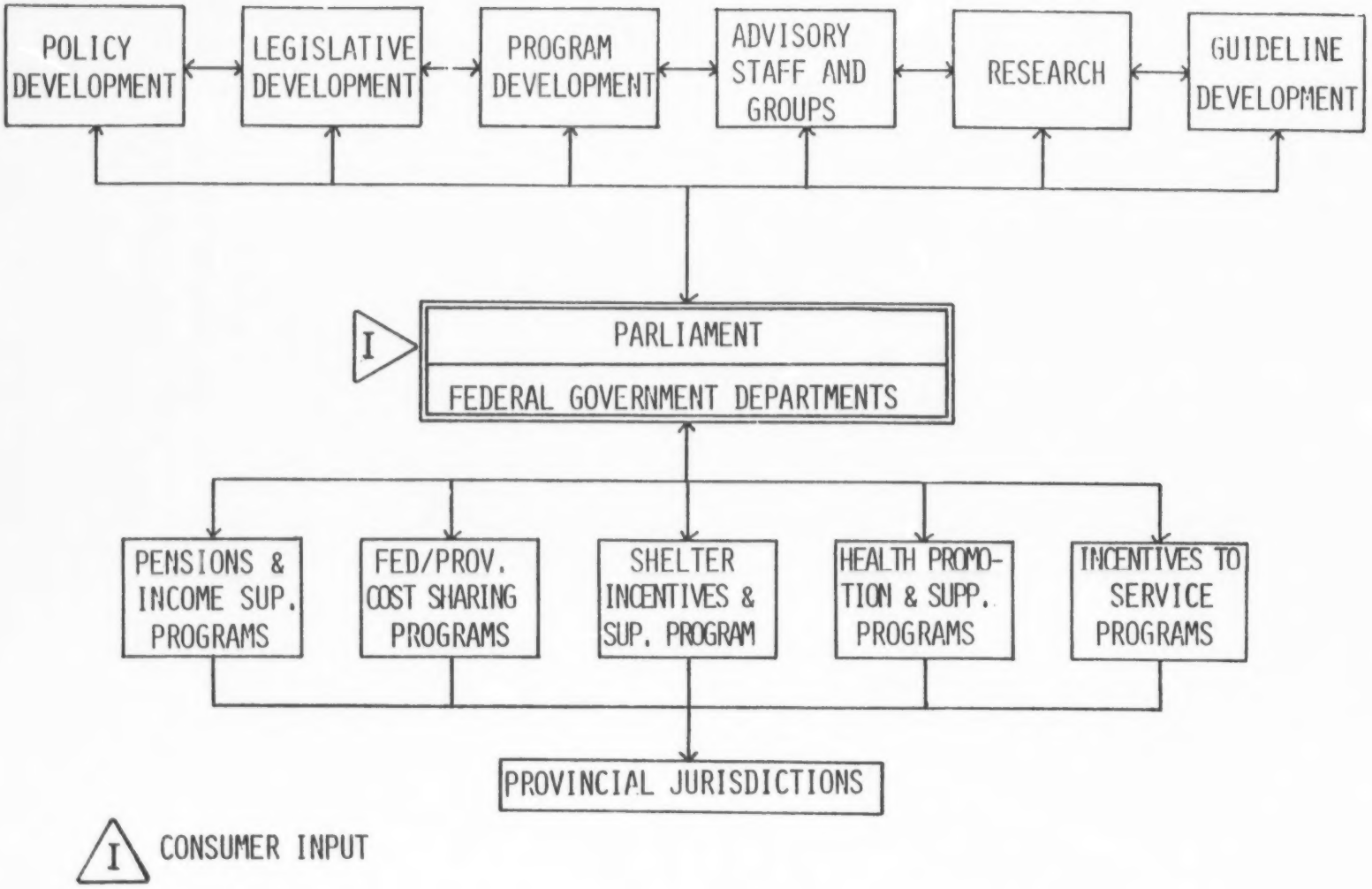
With very few adaptations, most activities and facilities can be made available. There are disabled people participating in every imaginable human endeavour, many with outstanding achievements. It is not so much the disability which must be overcome; rather it is that the disability will cease to be a handicap, given the right physical environment and social climate.

The need for personally directed home care/support programs may be drastically reduced through the provision of assisting devices. Regardless of the sophistication of the equipment, however, human support will continue to be necessary for many disabled people if they are to function effectively in their homes or in the community. The provision of assisting devices may, however, encourage the development of an appropriate and less dependent system of support, which would benefit both the recipients and the care providers.

In addition, technical assistance in the form of communication aids can improve or maintain the level of independence for disabled persons. Aids can compensate, to a small extent, for the loss of physical function, and in so doing, permit the individual to participate more freely in the day to day activities of community living.

The delineation of professional and non-professional deliverers of home care/support services tends to occur in most provinces, with the notable exception of Manitoba. As a consequence, a hierarchy of care develops which can affect funding priorities as well as the quality and appropriateness of service delivery.

In order to promote a continuum of care appropriate to all persons, regardless of location, it is essential that comprehensive legislation and the standardization of eligibility criteria be developed. Health care cannot hope to be effective if developed in isolation from other major health and social services. Therefore, to ensure accessible communities, the whole spectrum of care and support services must be considered during the development of policy, legislation and programs for disabled persons.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HEALTH PROMOTION & SUPP. PROGRAMS
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Figure 5

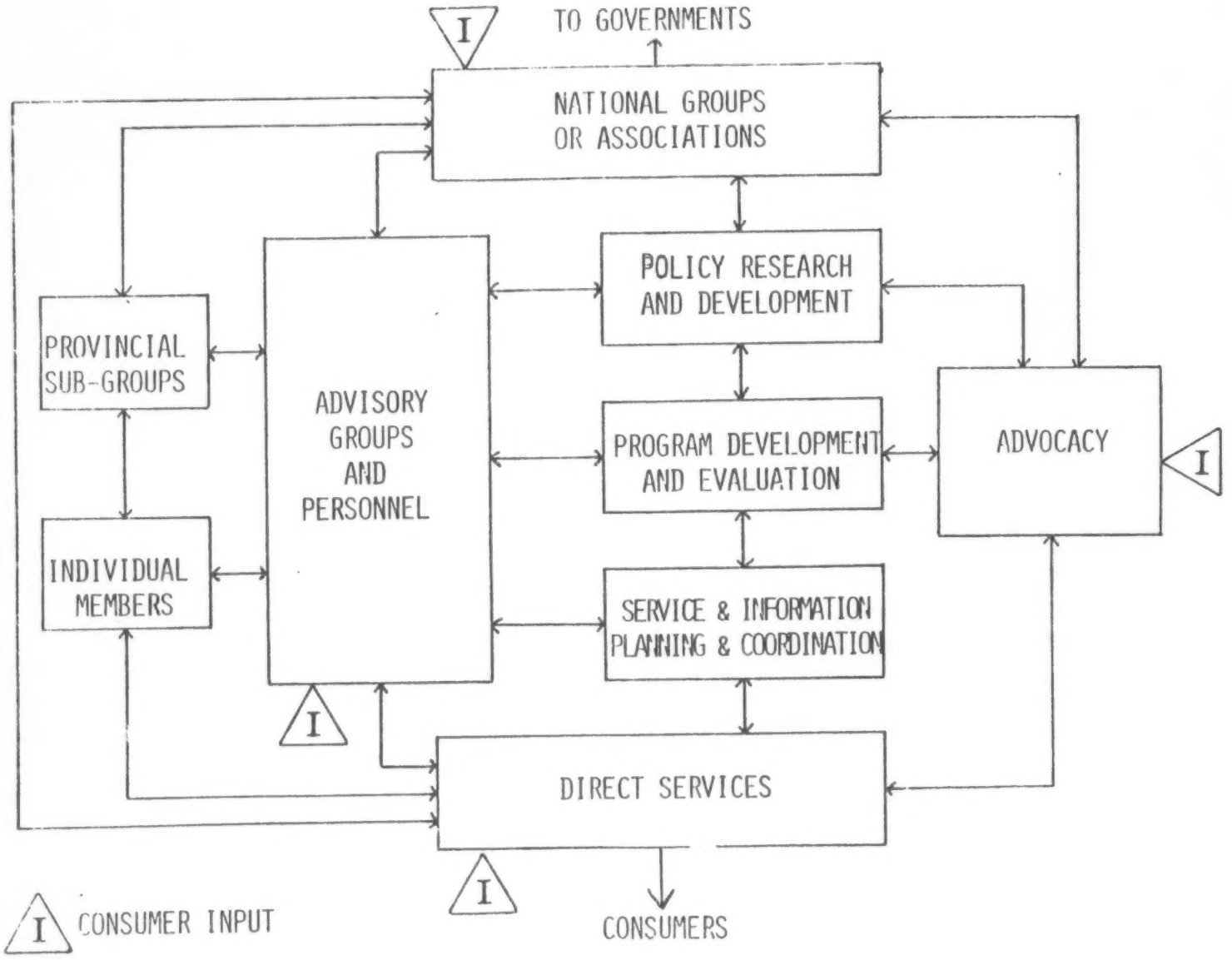
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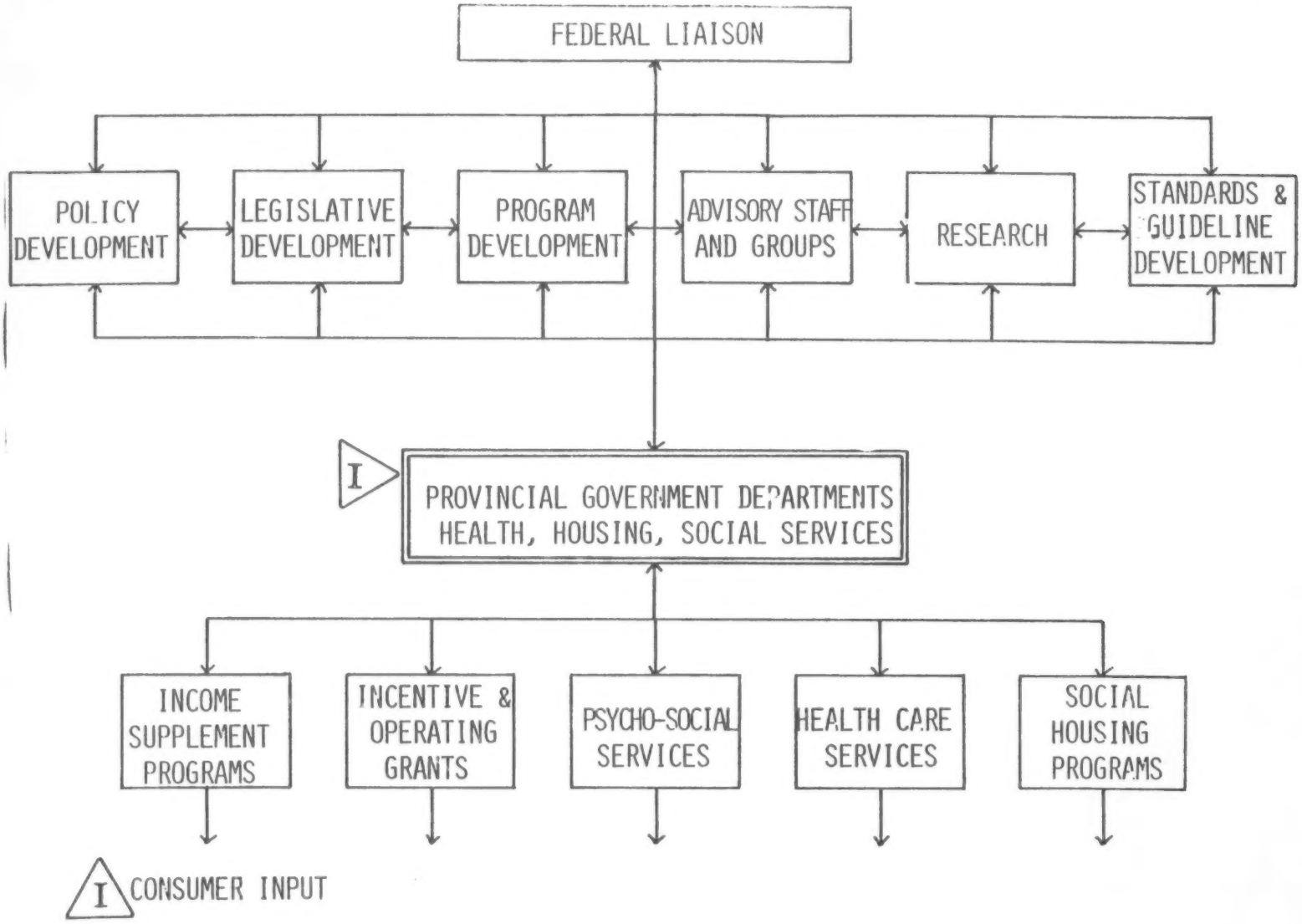
Figure 6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INCENTIVE & OPERATING GRANTS
PSYCHO-SOCIAL SERVICES
HEALTH CARE SERVICES
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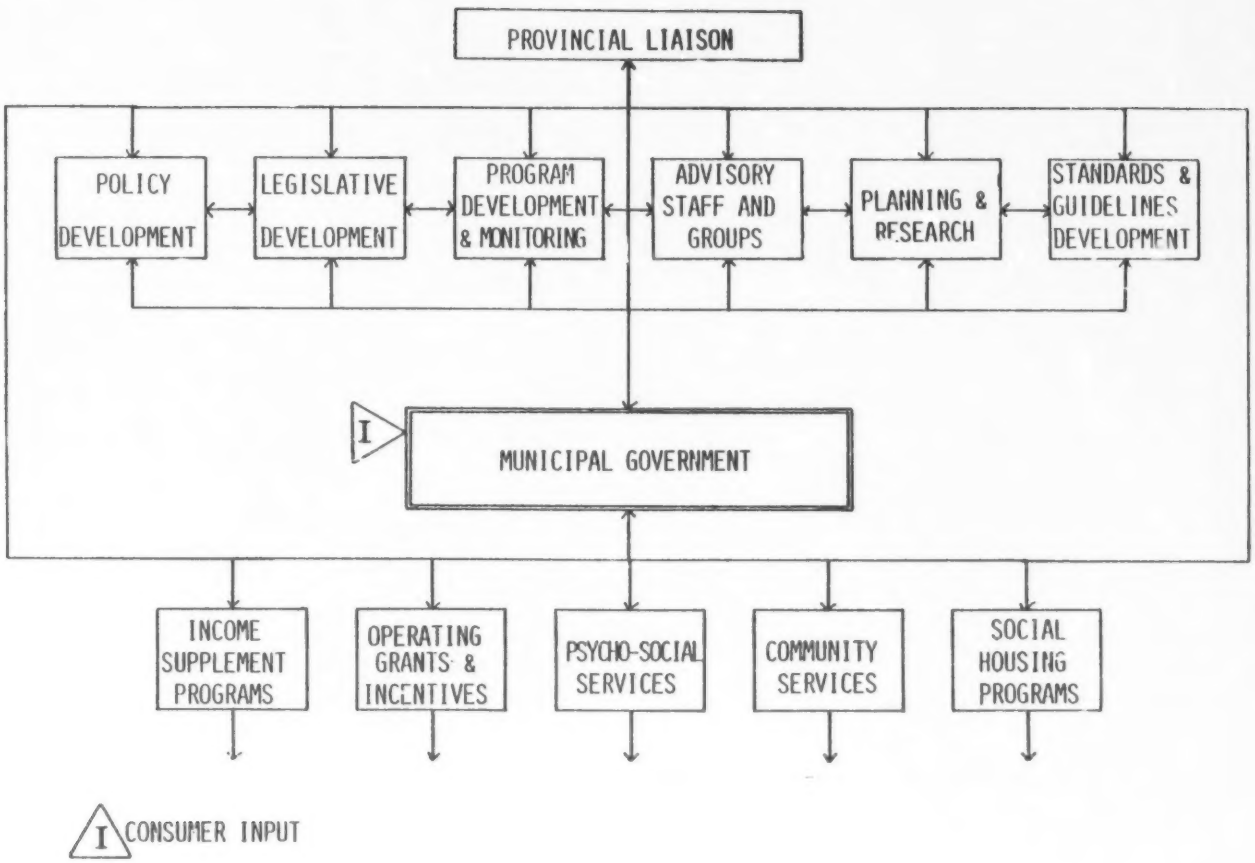
I CONSUMER INPUT

Figure 7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STANDARDS & GUIDELINES DEVELOPMENT
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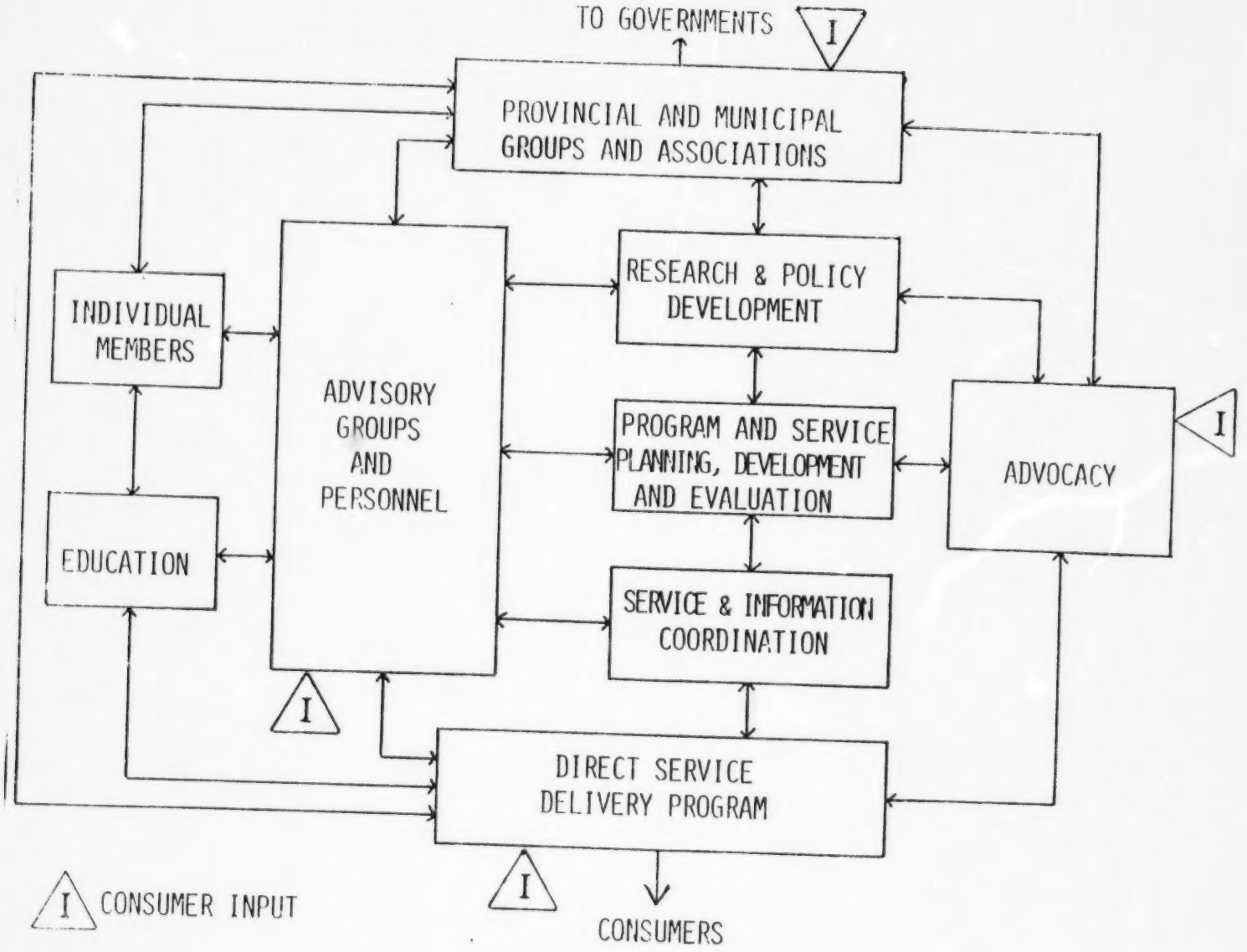
INCOME SUPPLEMENT PROGRAMS
OPERATING GRANTS & INCENTIVES
PSYCHO-SOCIAL SERVICES
COMMUNITY SERVICES
SOCIAL HOUSING PROGRAMS
I CONSUMER INPUT

Figure 8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SERVICE & INFORMATION COORDINATION
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DIRECT SERVICE DELIVERY PROGRAM
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CONSUMERS

Figure 9

SUMMARY OF PRINCIPLES

A well designed community should ensure that the disabled have access to, and the use of, a wide variety of services and opportunities, including:

- shelter (all forms)
- employment opportunities
- social and support services
- health services
- education and vocational training
- wholesale and retail services
- leisure and recreational activities.*

Access to these facilities and services should be made possible through the interaction of accessible transportation, pedestrian systems and sites.

Social planning, as an adjunct to the traditional framework of urban planning, should ensure that the community meets the physical, social, and service needs of all disabled residents (see figure 10).

PRINCIPLE 1: THE EXTERIOR ENVIRONMENT
THE EXTERIOR PHYSICAL ENVIRONMENT SHOULD BE ACCESSIBLE TO AND USABLE BY DISABLED PERSONS.

Design criteria that accommodate all types of disability should be developed for the exterior physical environment.

Design guidelines and criteria should be incorporated into appropriate federal/provincial/municipal legislation and implemented through local bylaws.

Legal mechanisms for monitoring and enforcing bylaws should be incorporated into appropriate provincial/municipal legislation.

All levels of government should make themselves familiar with the supportive elements and concerns of social planning bodies.

The physical components of urban planning should demonstrate an awareness of and include social planning concepts.

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* The subject of the housing needs of disabled persons has been discussed in other CMHC research studies and publications.

The numerous physical components comprising the exterior physical environment should be designed to promote ease of access to and use of by disabled persons.

PRINCIPLE 2: PUBLIC TRANSPORTATION
PUBLIC TRANSPORTATION SYSTEMS AND RELATED FACILITIES SHOULD BE ACCESSIBLE TO AND USABLE BY DISABLED PERSONS.

All public transportation systems should provide coordination and interaction between the home, pedestrian travel routes and necessary or desired services.

"Reasonable access" should be defined in a manner acceptable to disabled persons, transportation authorities and the general public.

Uniform legislation should be developed which provides for "reasonable access" to transportation systems falling within provincial/municipal jurisdiction.

Design criteria, appropriate to all disability groupings, should be developed and accommodated within provincial/municipal legislation.

Interaction between public and parallel transportation systems should be promoted.

The location/allocation of transit stops and travel routes should be appropriate to the community being served.

Surface vehicles (buses and streetcars) and systems, parallel transportation vehicles and systems, and related facilities should be designed or adapted to permit "reasonable access" by disabled persons.

All transportation systems should conform to accepted levels of safety, quality and performance.

All staff employed in public and parallel transit systems should be trained to assist disabled travellers.

PRINCIPLE 3: PRIVATE TRANSPORTATION
DISABLED PERSONS SHOULD HAVE ACCESS TO, AND USE OF, PRIVATE TRANSPORTATION AND PARKING FACILITIES.

Private transportation and parking facilities should be accessible to the disabled and be made a viable financial alternative to public transportation systems.

Federal policy should be developed which estabishes minimum levels of safety, quality and performance of automotive adaptations for disabled persons.

Standard specifications for automotive controls and adaptations should be developed for each make of car.

Provincial/municpal funding should be made available, when necessary, for the purpose of retrofitting private automobiles.

Legislation governing the licensing ard regulation of taxis should be amended to promote a more efficient use of services.

Municipal parking bylaws should provide for the parking of vehicles used by the disabled.

Parking facilities should be designed to accommodate disabled drivers and their vehicles.

Mechanisms for enforcing and monitoring the provision of parking for the disabled should be accommodated within the appropriate legislation.

PRINCIPLE 4: BUILDINGS AND FACILITIES
ALL BUILDINGS AND FACILITIES OPEN TO THE GENERAL PUBLIC SHOULD BE ACCESSIBLE TO AND USABLE BY DISABLED PERSONS.

All public buildings and facilities housing necessary or desired services should be easily accessible by way of public and private transportation systems and pedestrian travel routes.

Provincial/municipal building codes should be amended and revised to accommodate design criteria appropriate to all types of disability.

Provincial/municipal building codes should be amended and revised to make a wider variety of building types accessible.

Legislative provisions should be developed for the retrofit of older buildings to make them accessible to the disabled.

Legal mechanisms for enforcing or monitcring accessibility for the disabled should be accommodated by means of appropriate legislation.

All physical components, amenities and furnishings within public buildings should be accessible to and usable by disabled persons.

PRINCIPLE 5: SERVICES
DISABLED PERSONS SHOULD BE ABLE TO HAVE ACCESS TO AND USE ALL SERVICES AND OPPORTUNITIES IN THEIR COMMUNITY.

All buildings, housing, health and social, education and vocational services should be integrated into the framework of community social planning.

Comprehensive inter-ministerial and inter-departmental planning mechanisms concerning the disabled should be put in place.

All amenities and services should be designed to be accessible to and usable by disabled persons.

A comprehensive and uniform health care continuum should be developed which standardizes eligibility, cost and transferability of services and benefits between provinces.

A provincial/municipal inter-agency support network for the disabled, comprised of government and private sector service providers, should be developed.

All necessary financial and care support programs required by the disabled in their homes should be appropriate, available, continuous and transferable.

Affirmative action programs should be incorporated into all government and private sector places of employment.

Extraordinary costs of employment to disabled persons should be accommodated with appropriate legislation.

Disabled persons should have access to all necessary education, vocational and support aids.

Income and supplementary benefit programs should be appropriate to the needs of disabled persons and provide them with an adequate disposable income.

Information services should be integrated and be made available to all potential users, including the disabled.

COMMUNITY PLANNING FRAMEWORK

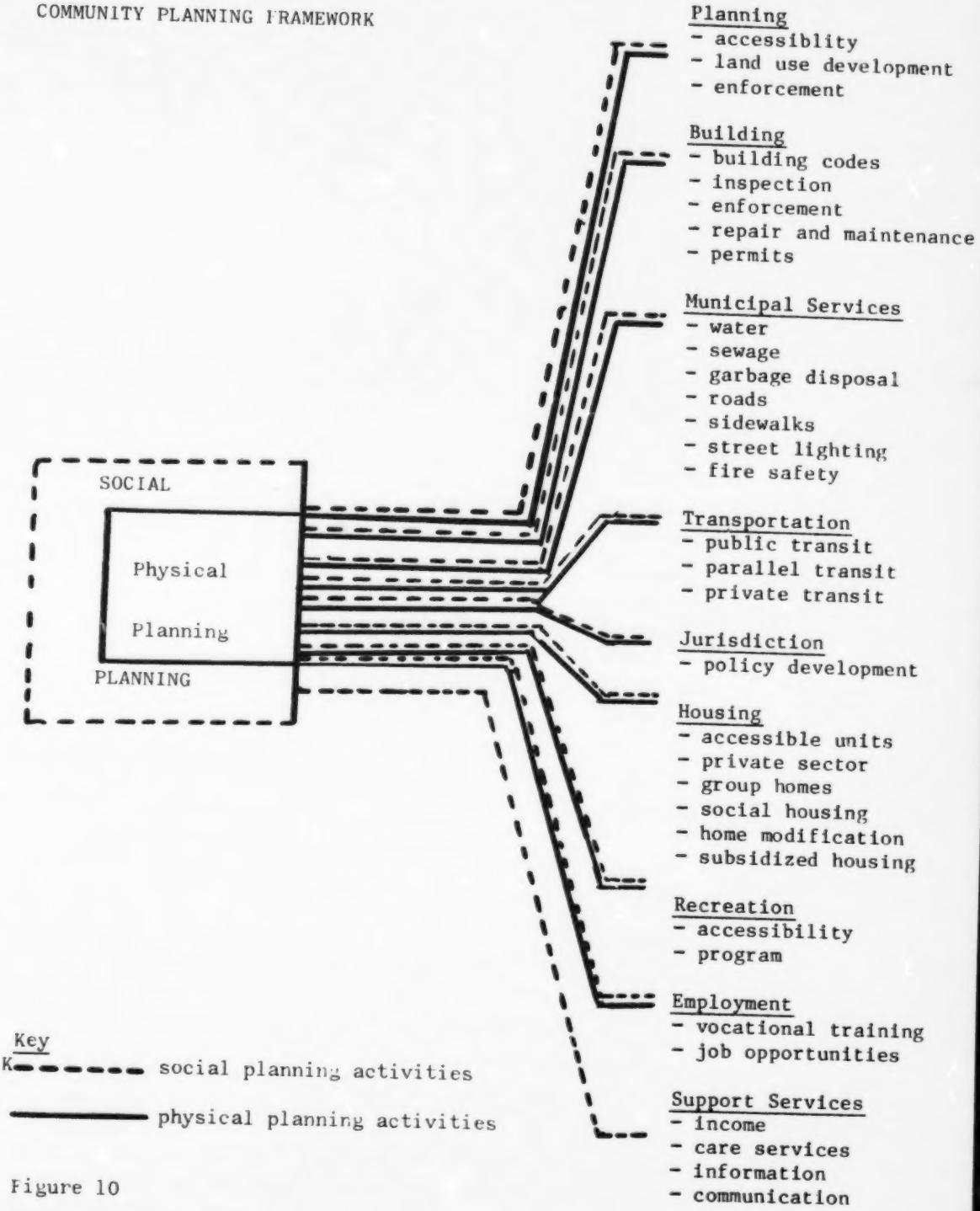

Figure 10